JOURNAL OF DENTISTRY FOR CHILDREN

Published by

The American Society of Dentistry for Children

Alfred E. Seyler, D.D.S., Editor
18557 East Warren Avenue, Detroit 36, Michigan

Editorial Board

Basil Bibby — Manuel M. Album — Gordon Rovelstad

Contributing Editors

Maury Massler — Kenneth A. Easlick — Manuel M. Album
William F. Via, Jr. — Theodore C. Levitas — Ralph L. Ireland

Issued quarterly in March, July, September and December at 1201-05 Bluff Street, Fulton, Missouri. Subscription price $5.00 per volume (four issues); to members of the A.S.D.C. $2.00 per volume. Single copies $1.25. *Changes of address should be sent to the business office, 13201 Miles Ave., Cleveland 5, Ohio.* Entered as second class matter at the post office at Fulton Mo.

Publication in the JOURNAL OF DENTISTRY FOR CHILDREN is not to be taken as an endorsement by the Publishers, the Editors or the Editorial Board.

VOLUME XXVI — *Second Quarter, 1959* — NUMBER 2

CONTENTS

Conservation of Primary Teeth Using High Speed and Willett Inlays, *Quinton E. Williams, D.D.S. and Sumter S. Arnim, D.D.S., Ph.D.* 94
Progeria—Case Report 106
Are You Moving Soon? 115
Unit News, *Ted Levitas* 116
Anomalous Pulp Horn Extension—Case Report, *Emmett R. Costich, D.D.S., Ph.D.* 127
Forum on Cerebral Palsy—Dental Aspects 130
The Physiologic Basis for the Clinical Management of Patients With Cerebral Palsy, *Jerome S. Tobis, M.D.* 132
Partial and Complete Denture Prosthesis for Patients With Cerebral Palsy, *Sidney I. Silverman, D.D.S.* 135
Preliminary Program and Pre-Registration Form, 1959 Annual Meeting, American Society of Dentistry for Children 138
How Much Irradiation Do You and Your Patients Receive? *Richard C. Haskins, D.D.S., M.S.D.* 144
The Dental Care of Handicapped Children in the Hospital, *Richard Naismith, B.S., D.D.S., M.P.H.* 149
Pulp-Curettage; A Review, *Maury Massler, D.D.S., M.S.* 154
Abstracts 158

Conservation of Primary Teeth Using High Speed and Willett Inlays*

QUINTON E. WILLIAMS, D.D.S.† AND SUMTER S. ARNIM, D.D.S., PH.D.‡

INTRODUCTION

THIS paper describes a system of treatment for carious primary teeth, based upon biomechanical principles that is calculated to conserve dentin, protect the pulp, minimize patient discomfort, strengthen remaining tooth substance, save time for patient and dentist and give the patient a superior professional service with no increase in cost.

REVIEW OF LITERATURE

The Willett[1] inlay for primary teeth has been known to the dental profession for thirty years. Cohen[2] gives a detailed description of the technic for its fabrication in his textbook. The biomechanical advantages of treatment of carious primary teeth with this type operation and restoration are partly revealed in studies of caries incidence and of dentin volume.[3, 4, 5]

The molars, upper and lower, often decay at the same time on the mesial and distal as well as the occlusal surfaces. The upper central incisors also develop lesions in almost equal numbers on both the mesial and distal. These facts support the choice of a restoration that will arrest the carious process in lesions present and prevent new ones on the surfaces involved. The alert operator will expect to find signs of caries activity on each of the surfaces named, if he finds a lesion on any one of them. This observation becomes more and more applicable, clinically, as the patient grows older or as the susceptibility to dental caries increases. The Willett inlay allows coverage of the carious surfaces with minimal excision of tooth substance and maximal extension for prevention. The technic of cavity preparation also allows the operator to take advantage of the presence of coexistent lesions in approximating surfaces, thereby saving much time as both cavities are excised with one instrument in a single operation.

Careful study of the anatomy of primary teeth provides further justification for the Willett type treatment. Illustrations of typical dissections of primary teeth with measurements of dentin thickness at various levels in the crowns are published.[4] Such studies clearly demonstrate the value of the dentino-enamel junction as a base line from which excision of dentin in a pulpal direction may be measured. The clinical application of studies of this nature is summarized in Figure 1. The "safety zones" are used to indicate the need for an insulating layer of healthy dentin at least ½ mm thick between the floor of the cavity and the dental pulp.[6] Some teeth may have so little dentin that the desired thickness is not present. Most of these are found in the group represented

* This research was supported in part by U. S. Public Health Service Research Grant D-200 and the Procter and Gamble Research Grant.

† Quinton E. Williams, Clinical Instructor of Dental Pathology, The University of Texas Dental Branch.

‡ Sumter S. Arnim, Professor of Pathology, Director, Postgraduate School of Dentistry, The University of Texas Dental Branch.

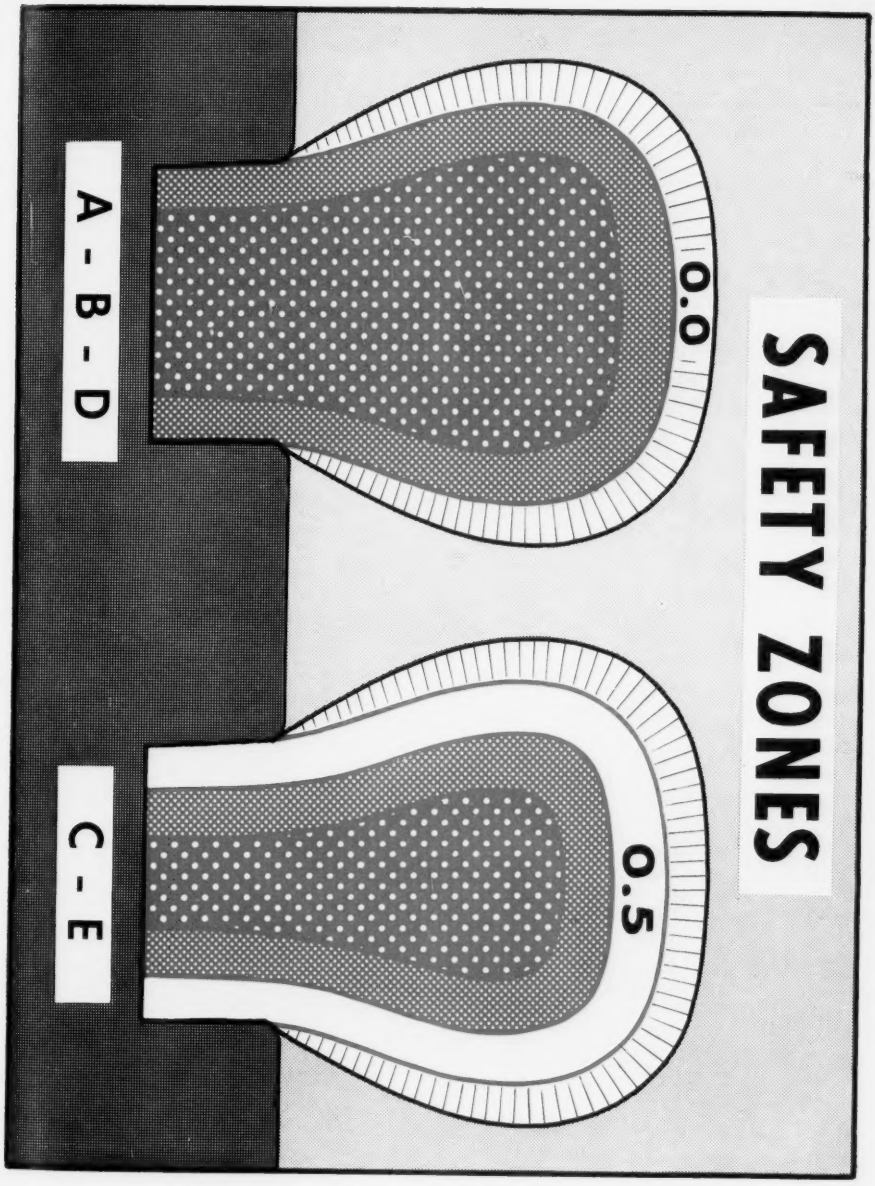

FIGURE 1. SAFETY ZONES.

The numerals within the teeth indicate the maximal depth to which a cavity may be cut into dentin safely,[6] measuring from the dentino-enamel junction toward the dental pulp. When these distances are not exceeded an insulating layer of dentin at least ½ mm thick, will remain in any of the teeth measured.[4] The figures are based on the least amount of dentin found in any of the teeth studied. An average amount of dentin will provide a greater margin of safety.

HEALTH SCIENCES LIBRARY
UNIVERSITY OF MARYLAND
BALTIMORE

as having no safety zone. It is in these teeth that most exposures and other pulpal mishaps occur.

In addition this lack of dentin creates added problems especially with retention of amalgam restorations. Mahler[7] discusses stress factors in amalgam restorations for primary teeth. He says, "From the standpoint of tooth structure, increasing the width of the isthmus, as well as increasing the depth, both result in an increase in the internal stress within the tooth, thereby lowering its resistance to structural deformation and failure."

If a spatial analysis is made of all related anatomic factors, it is evident that the Willett type preparation conserves both dentin and pulp. A spatial analysis of a cavity preparation in a carious primary maxillary second molar is shown in Figures 2 to 5. The carious teeth and the instruments used are drawn to scale. The stones illustrated are those recommended by Willett. Any dentist can make similar studies of spatial factors and related clinical applications to cavity preparation and instrumentation by sectioning and studying representa-

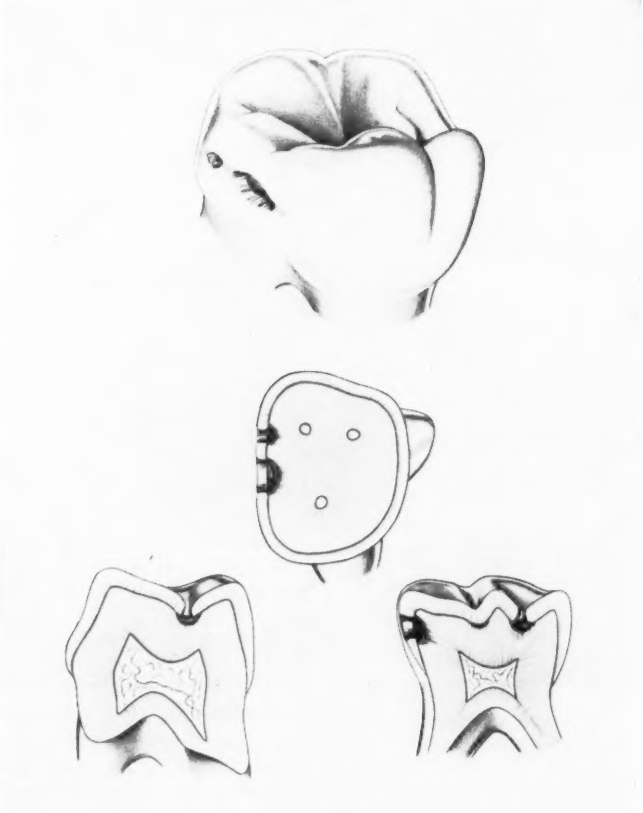

FIGURE 2. The carious tooth is horizontal, mesiodistoaxial and buccolinguoaxial sections.

tive carious human teeth in the manner indicated.[4]

As a casting is the only restorative material that will withstand masticatory stress and strengthen further remaining tooth substance in a cavity preparation of the type illustrated, one may reasonably wonder why it is not used by most dentists for treatment of carious lesions in primary teeth. The answer is found in the instruments, materials and technics that were available to the profession at the time the Willett system of treatment originated. Stones were used to excise tooth substance at slow speeds; compound was used for impression taking, and casting investment served as both model and investment material. Low cost alloys then available were difficult to manipulate and unpredictable in behavior. With these conditions the technic was not practical in the hands of the dentist. Its value as a means of treating carious primary teeth was so great, however, that the system has persisted through the years. It is employed by many practitioners to excellent advantage.

The outine of a modified Willett system that follows combines the funda-

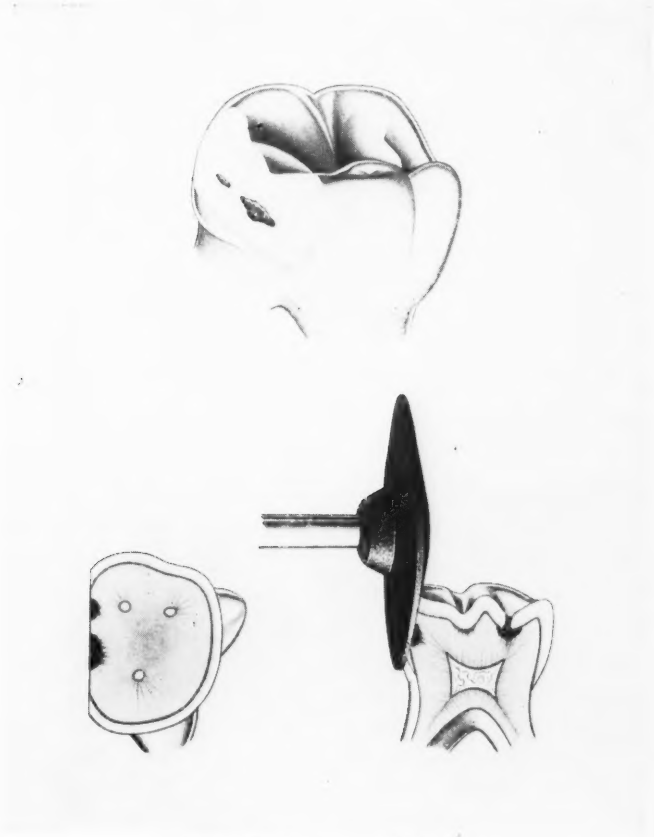

FIGURE 3. The "proximal slice."

mental biologic principles that have withstood the test of time and clinical trial with modern technics of cavity preparation and filling fabrication. The methods outlined make the system easy to use in any dental office to the ultimate benefit and welfare of both patient and dentist.

Methods—Cavity Preparation, General Considerations

Tooth substance is excised with diamond instruments revolving at 200,000 revolutions per minute* in a field that is washed with water and cleared of liquid and debris by vacuum.** Local anesthetic is seldom needed as cutting is *intermittent* and as the cavity is extended only a quarter of a millimeter or less into healthy dentin.

When an anesthetic is required special care is taken to avoid heat production by shortening the periods of intermittent

* Borden Airotor

** "Vacu-dent"—Densco Inc., Denver, Colorado.

Figure 4. The occlusal groove.

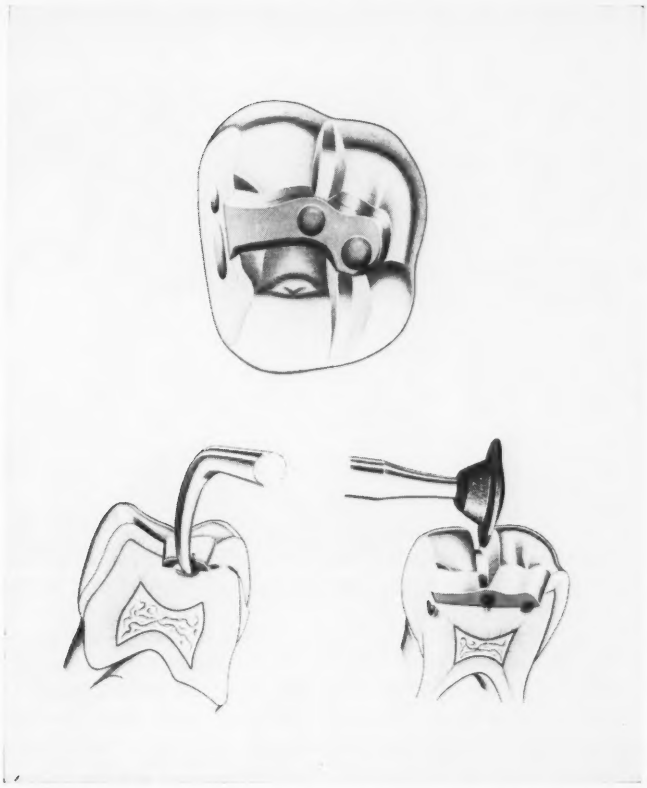

FIGURE 5. Buccal and lingual grooves, removal of remaining carious dentin and finished preparation.

grinding, by increasing quantity and flow of coolant on the instrument and between the instrument and tooth, and by excising as little healthy dentin as is possible. The quantity of anesthetic used should be little as the time of operation is short even when several teeth are operated at one sitting. As dental caries usually begins in the primary molars of both jaws, and on approximal surfaces of primary molars in the same age period, time is saved by operating all affected teeth in a quadrant, or even in two or more quadrants, during one appointment.

PROCEDURE

Step. 1. The proximal slice.

Excision of enamel on approximal surfaces to produce a typical slice is done with a long, small diameter (.6 mm) tapering diamond.* The instrument is held so that the cut will follow the dentiono-enamel junction, Figure 6. This will remove most of the proximal enamel of the carious tooth and will leave no undercuts in the finished slice. The small instrument usually will clear the

* Chayes No. D-5 or Densco No. ½ DL.

FIGURE 6. Model of a patient's teeth with diamond instruments in position.

adjoining tooth without scratching its enamel surface. If the adjoining tooth has a carious lesion in the approximating surface, and this is usually the case, a larger (1.2 mm) torpedo shaped diamond* is used and both teeth are sliced at the same time. The cylindrical stones are preferred to disks as there is less danger of cutting soft tissues.

Step 2. The buccal and lingual retentive grooves.

Retention for the cast restoration is obtained by grooves on the buccal and lingual surfaces, respectively, of the molars. These grooves are also made with the torpedo shaped diamond, Figure 6. They begin in the apical third of the crown, extend occlusally where they join with and cross the occlusal groove.

Step 3. Occlusal groove.

The extension of the cavity across the occlusal surface is made by excising enamel and about ¼ mm of dentin with the torpedo shaped diamond from the proximal slice along the central groove, until sufficient extension is obtained mesio-distally. Little width or depth is required as retention is obtained with an enveloping extracoronal rather than an embedded intracoronal design. The finished preparation is shallow and without undercuts. Scratches produced by the diamond particles in the finished cavity walls aid in retention of the cemented restoration.

Step 4. Removal of carious dentin.

Any carious dentin that has not been removed in steps 1 through 3 is scooped from the tooth with sharp spoons just after the impressions are taken. If the carious lesion is deep, the necrotic dentin is partially excised with a sharp spoon and a treatment filling, composed of calcium hydroxide covered by a paste

* Chayes No. D-6 or Densco No. IC.

of zinc oxide and eugenol, is placed. The therapeutic restoration is left in the tooth for a week. At the end of the trial period, the patient is questioned about symptoms; the tooth is examined for color and tested for vitality. Should the results of the examination indicate that the pulp is vital and healthy the treatment filling is partially removed; the remainder is left as a therapeutic base, and the inlay is cemented.

When, in the operator's judgment, there is reasonable doubt about the health of the tooth all the treatment filling is removed and the cavity is examined very carefully for evidence of pulp exposure. The results of this examination may indicate that another treatment filling be placed or that a pulpotomy is advisable.

When pulp therapy is necessary for any tooth the preparations are extended over all cusps and an impression is made. After the pulp treatment is completed the chamber is filled with cement and the inlay is cemented in the usual manner.

Step 5. Impressions.

The impressions of all teeth operated are made during the same appointment. The small Willett trays are used, one for each quadrant. The trays are half filled with soft compound, and preliminary impressions are made. They are coated with adhesive and set aside until the cavity preparations are completed. If the gingiva interferes it is shrunken with an astringent. The teeth and gingiva are dried carefully. Silicone* impression material is mixed as directed by the manufacturer, placed on the compound in the tray and positioned in the mouth using the compound as a stop, Figure 7. It is held steadily until set. The tray is then removed and the impression studied carefully. If it is defective, the silicone is stripped from the compound, a new

* "Sir"—Acralite Company.

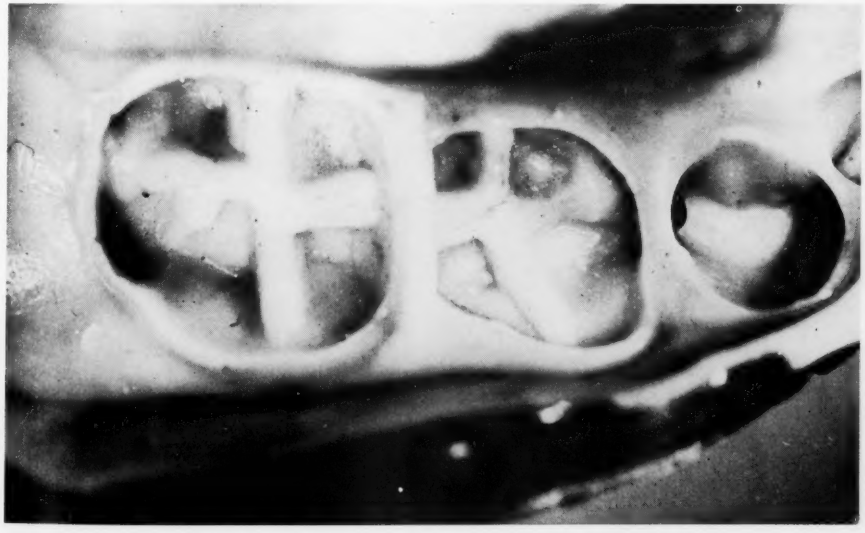

FIGURE 7. The impression with elastic trimmed to show compound stop.

mix is made, and placed on the compound, without more adhesive, and the impression is retaken. Remaining carious dentin is excised with sharp spoons and zinc oxide and eugenol is used as a temporary restoration. Some is left as a base in the deepest parts of the preparation, when the inlay is seated.

Step 6. Laboratory procedure.

All laboratory work may be done by a trained person in the dentist's office. Instructions are given the technician concerning contour, contact, tooth size, occlusal carving, etc., with the completed impression. The model is made of dense, heavy stone which is teased into the impression with a small brush in order to fill all the marginal surfaces exactly. After the stone has hardened the models are trimmed neatly and sawed with a fine coping saw between each tooth. The cut extends almost through the model, but the final separation is made by breaking the model apart. This allows for reassembly of the parts at the time the patterns are carved.* Slight excess is allowed for final finish of margins and contact when the inlays are set, Figure 8.

The inlays are made of a low melting point casting metal.* Several may be cast in the same ring at one time. The ring is not heated above 700°F. when casting ingots are used. Overheating the ring or metal produces distorted, porous, discolored castings.

The restorations are finished, almost completely, on the stone model. They should be contoured and polished so well in the laboratory that no more than a few minutes are needed for final adjustment on the patient's teeth. As the wax patterns were carved with little excess, the finished inlays are seldom high. Should occlusal adjustments with opposing teeth be necessary, this is done in the mouth by grinding. Marginal fit is perfected with burnishers and abrasive disks, Figure 9.

When carious lesions occur on the incisors, cast restorations are particularly suitable. Impression, model, and finished

* J. B. Moyer Co. Green casting wax.

* Clev-Dent casting ingots.

FIGURE 8. Model of molars with wax carvings showing saw cuts and reassembly.

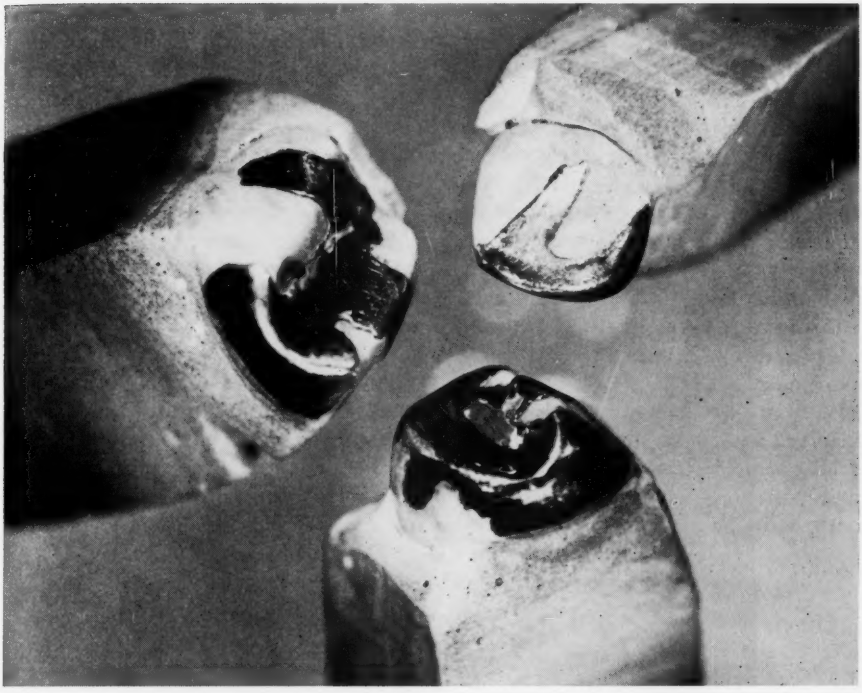

FIGURE 9. Finished inlays on stone models.

castings for these teeth are illustrated in Figure 10.

The inlays are seated during one appointment, Figure 11. This requires so little time that other work may be done also. Should there be need to repair a margin at some future time amalgam may be placed in direct contact with the casting alloy without harm to either.

DISCUSSION

The technic outlined above is more practical than any we have tried heretofore. It preserves all the biomechanical advantages of previous systems of treatment. It employs new methods and materials in such a way that the operation is performed with less discomfort to the patient, with a substantial saving of time to patient and operator, with greater ease on the part of the operator, with less trauma to the pulp and with better results for patient and dentist.

These advantages are derived from several sources. The diamond instruments revolving at high speeds shorten time required for cavity preparation. The water sprays used as coolants tend to minimize pulpal reaction. The vacuum system for recovery of water and debris makes the use of the high speed instruments practical as lots of water can be used as needed to keep the tooth and patient comfortable during the operation. Little if any anesthetic is required as cutting is confined almost entirely to enamel. The operator has the patient's reactions to guide him so that

his touch may be developed to the utmost.

The reduction in length of time required for the operation is economically significant. However, it is the change in the nature of impression materials that has done most to make the Willett system practical. When compound was the impression material of choice, all grooves in the several teeth operated had to be in the same plane to allow withdrawal. If this were not true, there were undercuts present that distorted the compound and spoiled the fit of the castings.

With the new substances accuracy is preserved and impressions may be made of all operated teeth at one time. Each cavity preparation, in its respective tooth, must have no undercuts but the plane of withdrawal may vary from cavity to cavity as the impression is not distorted by slight differences. This characteristic of the new materials further shortens operating time and improves the end product.

Highly trained assistants are essential in order to make this system an economically desirable routine office procedure. Both chairside and laboratory helpers are part of the team that insures a superior service to the patient at reasonable cost.

Service costs are derived from total man hours required plus the overall operating expense. The technic outlined in this paper requires far less patient time for the operation than any other method. The dentist is able to perform

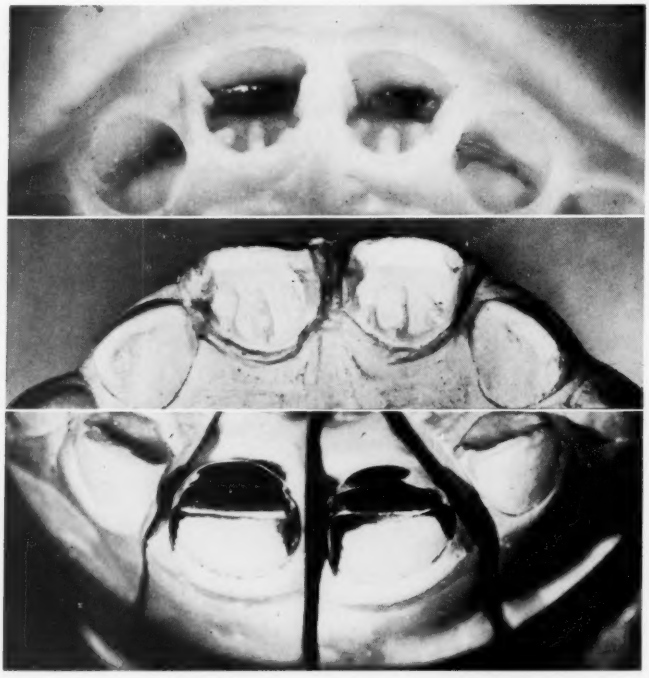

FIGURE 10. Impression, model and castings for the central incisors.

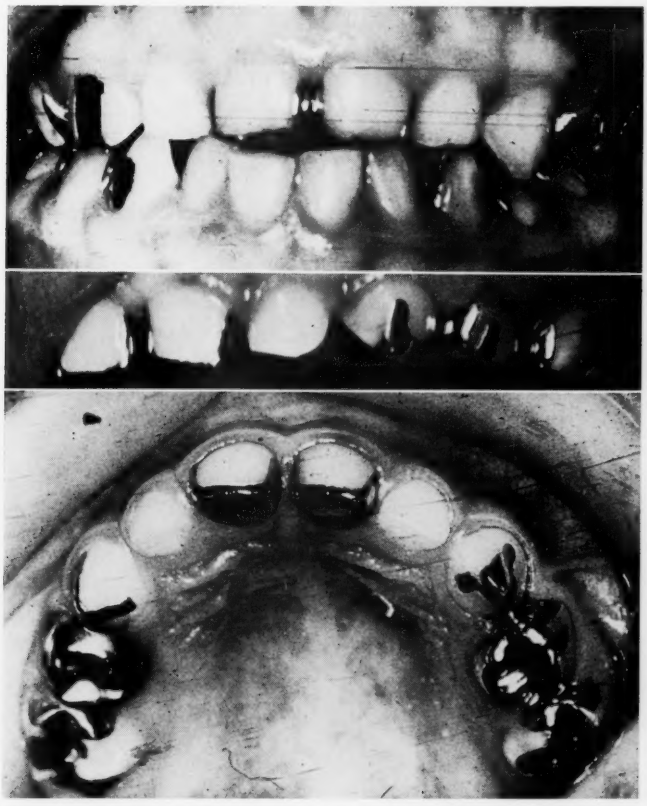

FIGURE 11. Finished inlays in patient's mouth.

more operations each day. His professional skills are directed where they are needed most; to patient care. The use of trained ancillary personnel makes the whole system economically feasible. The end result is a high quality restoration, produced in less time, at a lower cost, thereby providing a superior professional service for the patient with an increased financial return to all concerned.

BIBLIOGRAPHY

1. WILLETT, R. C., Inlay restoration for deciduous molars. D. Items Interest 50:345, May 1928.
2. COHEN, M. M., Pediatrics dentistry. St. Louis, C. V. Mosby Co., 1957, 275 p.
3. ARNIM, S. S., Utilization of biologic principles in the practice of operative dentistry. II. Statistics an aid to efficient diagnosis. J. D. Res. 21:243, June 1942.
4. ARNIM, S. S. AND DOYLE, MILLARD P., Dentin dimensions of primary teeth. J. D. Children—In print.
5. Kurer, J., Die schmelz-dentinstarke der milchzahne. Sonderdruck aus der Zeitschrift fur Stomatologie 18:1253-1259, 1937. Thickness of enamel-dentin of deciduous teeth (Abstract). Year Book of Dentistry, Chicago, The Year Book Publishers, 1938, pp. 289-292.
6. Shroff, F. R., Effect of filling materials on the dental pulp. New Zealand D. J. 42:99, July 1946; 145, Oct. 1946; 43:35, Jan. 1947.
7. Mahler, D. B., Analysis of stresses in a dental amalgam restoration. J. D. Res. 37:516, June 1958.

Progeria—Case Report*

PROGERIA, a rare disease of childhood, although discussed in the medical literature, has rarely been evaluated dentally other than an explanation as to the number of teeth present. Hutchinson[1] in 1886 and Gilford[2] in 1887 first described this anomaly of birth.

Originally, the belief as to etiology of this disease was a deficiency of the anterior lobe of the pituitary gland. This however, has been disproved by Atkins,[3] Wilkins,[4] and others with autopsies on these patients. There is no real explanation for the occurrence of progeria. Talbot[5] believes these children suffer from energy-metabolic embarrassment. For lack of better etiology, this will suffice.

Characteristics

Basically, progeria patients show a reduction of statural growth (without disturbance to bone maturation), senile changes influencing the cardiovascular system, and retained infantile features. In addition, these children are dwarfed in stature, almost completely bald, display a beaked nose, receded chin, narrow chest, prominent veins, and atrophic changes involving the skin and subcutaneous tissues. Pigmentation of the skin occurs.

In another paper on the radiologic

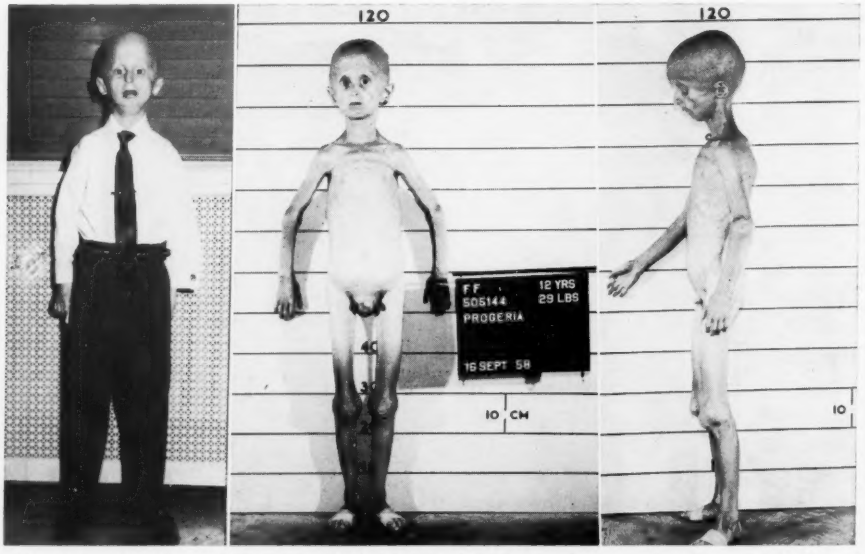

FIGURE 1. (a) Patient admitted to Children's Hospital during first examination on 3-11-57 and shows typical features of progeria. At that time he was 10½ years of age with a height of 44 inches and a weight of 35 pounds.

(b and c) Same patient now 12 years old (9-7-58) with a weight of 29 pounds, was admitted to hospital for heart failure. Notice gaunt and drawn physical appearance.

* Presented by Manuel M. Album at Academy of Pedodonties Annual Meeting, St. Louis, Mo., October, 1958. Acknowledgment is made to Doctors Wilton Krogman and Viken Sassouni for their assistance in the preparation of this report.

FIGURE 2. Photograph of head shows prominence of superficial veins, baldness of scalp with thin strands of hair, closeness of eyes, lack of eyebrows, and typical bird-like appearance of nose and maxilla.

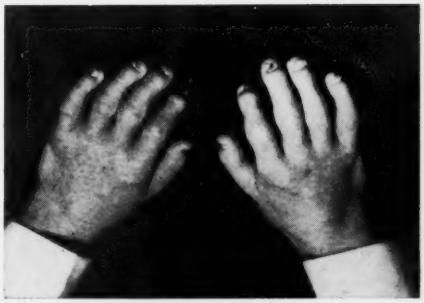

FIGURE 3. Skin of hands is dry, thin, taut, and mottled. Fingers are small, with knobby prominent appearance of phalanges. Nails are short, brittle, dry, and broken.

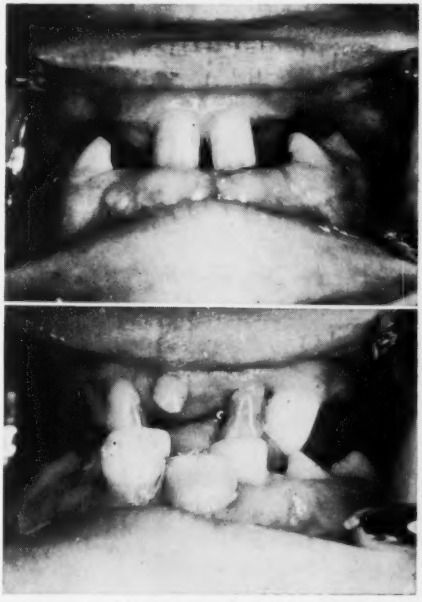

FIGURE 4. (a) Photograph of mouth and teeth during first admittance to hospital. Notice retention of primary dentition.

(b) Mouth seen 1½ years later. Permanent teeth are still retarded in eruption.

interpretation of the individual bones of the body, no gross disturbance of development was observed but a number of small findings were consistent with other published cases of progeria.[6]

The long bones are slender and delicate producing a prominence in the knee and elbow joints. An extreme degree of coxa valga is present in the pelvic region. The terminal phalanges of the hands and feet are abnormally short and taper abruptly to a pointed end. The finger nails are small and atrophic. The thoracic cage is slender with delicate ribs. Slender ribs and clavicles in these patients produce a predisposition toward easy, early fracture.

Bone maturation is not advanced as shown by the epiphyseal development of the hands, wrists, elbows, knees, and pelvis.

The mastoid and occipital fontanels of the skull are still open and the maxilla is markedly reduced in size in

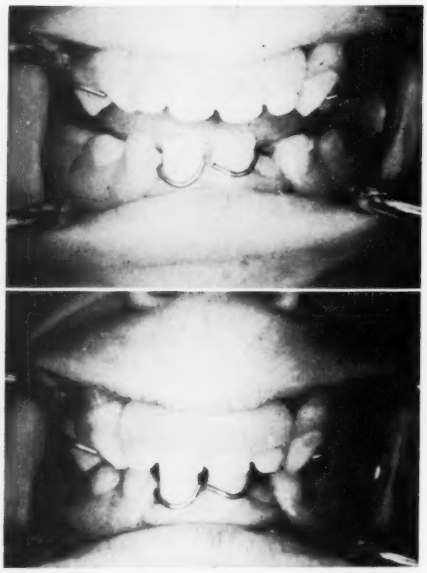

FIGURE 5. Upper and lower partial dentures in place.

FIGURE 6
DEVIATIONS OF H.F. FROM AGE NORMS AT FIRST AND SECOND EXAMINATIONS

		First	*Second*
Height		minus – 136 mm.	minus – 328 mm.
Height		minus – 5.45 in.	minus – 12.91 in.
Sitting Ht.		minus – 58 mm.	minus – 145 mm.
Weight		minus – 6.39 kgs.	minus – 23.56 kgs.
Weight		minus – 14 lbs.	minus – 52 lbs.
Shoulder	B	minus – 49 mm.	minus – 113 mm.
Chest	B	minus – 26 mm.	minus – 67 mm.
Chest	D	minus – 14 mm.	minus – 36 mm.
Hip	B	minus – 13 mm.	minus – 48 mm.
Head	C	minus – 7 mm.	minus – 19 mm.
Head	B	minus – 7 mm.	minus – 8 mm.
Head	H	minus – 7 mm.	minus – 6 mm.
Face	H	minus – 11 mm.	minus – 28 mm.
Face	B	minus – 7 mm.	minus – 19 mm.
Nose	H	minus – 2 mm.	minus – 12 mm.
Nose	B	minus – 6 mm.	minus – 11 mm.

FIGURE 7
MEASUREMENTS OF H.F., COMPARED TO AGE NORMS, AT FIRST AND SECOND EXAMINATIONS

		First		*Second*	
		H.F. (4:1)	Av. (4:0)	H.F. (10:8)	Av. (11:0)
Height		911 mm.	1047 mm.	1126 mm.	1454 mm.
Height		35.87 in.	41.22 in.	44.33 in.	57.24 in.
Sitting Ht.		546 mm.	604 mm.	615 mm.	760 mm.
Weight		10.88 kgs.	17.27 kgs.	14.06 kgs.	37.62 kgs.
Weight		24 lbs.	38 lbs.	31 lbs.	83 lbs.
Shoulder	B	185 mm.	234 mm.	198 mm.	311 mm.
Chest	B	164 mm.	190 mm.	165 mm.	232 mm.
Chest	D	117 mm.	131 mm.	131 mm.	167 mm.
Hip	B	157 mm.	170 mm.	182 mm.	230 mm.
Head	C	168 mm.	175 mm.	168 mm.	187 mm.
Head	B	134 mm.	141 mm.	140 mm.	148 mm.
Head	H	121 mm.	124 mm.	122 mm.	128 mm.
Face	H	82 mm.	93 mm.	81 mm.	109 mm.
Face	B	105 mm.	112 mm.	107 mm.	126 mm.
Nose	H	35 mm.	37 mm.	36 mm.	48 mm.
Nose	B	21 mm.	27 mm.	20 mm.	31 mm.

FIGURE 8
INCREMENTS IN BODY GROWTH
H.F. AND NORM, 4:0-11:0

Stature	
H.F.	215 mm.
Av.	407 mm.
SH	
H.F.	69 mm.
Av.	156 mm.
Weight	
H.F.	7 lbs.
Av.	45 lbs.
Shoulder B	
H.F.	13 mm.
Av.	77 mm.
Chest B	
H.F.	1 mm.
Av.	42 mm.
Chest D	
H.F.	14 mm.
Av.	36 mm.
Hip B	
H.F.	25 mm.
Av.	60 mm.

FIGURE 9
INCREMENTS IN HEAD AND FACE
GROWTH, H.F. AND NORM
(4:0-11:0)

Head L	
H.F.	0 mm.
Av.	12 mm.
Head B	
H.F.	6 mm.
Av.	7 mm.
Head H	
H.F.	1 mm.
Av.	4 mm.
Face H	
H.F.	0 mm.
Av.	16 mm.
Face B	
H.F.	2 mm.
Av.	14 mm.
Nose H	
H.F.	1 mm.
Av.	11 mm.
Nose B	
H.F.	0 mm.
Av.	4 mm.

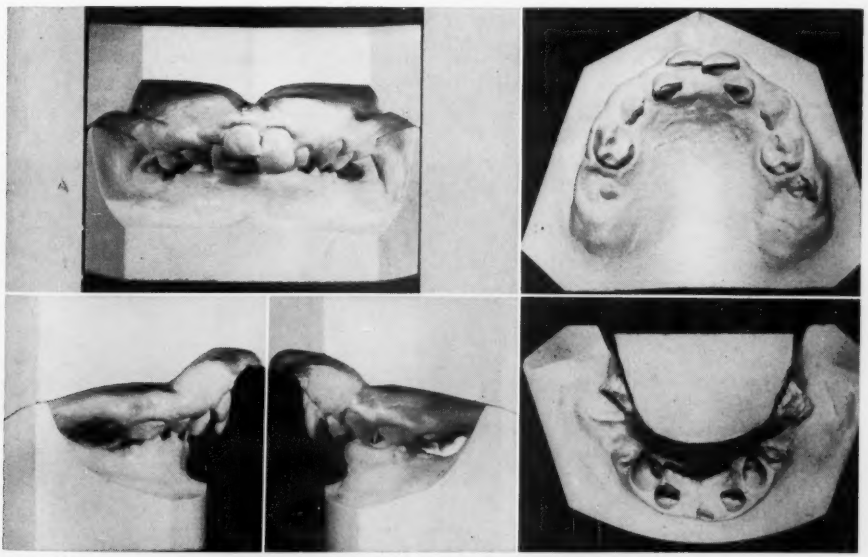

FIGURE 10. (a, b, and c) Severe retrusion of mandible allowing limited space opening between maxilla and mandible.

(d and e) Models show arrangement of primary teeth and broken-down condition of mouth when first admitted to hospital on 3-11-57.

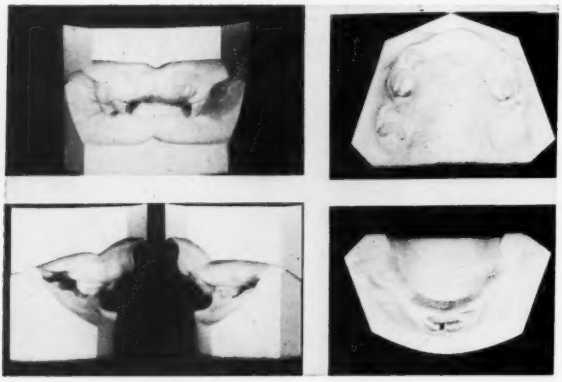

FIGURE 11. Present models of maxilla and mandible still demonstrate retruded condition of mandible as well as a lack of full complement of permanent teeth. The three lower incisors are only permanent teeth present.

its relationship to the face and to the mandible. This produces the characteristic bird-like appearance.

The mandible is short and is in a retruded position in its relation to the maxilla thereby resulting in a marked Class II malocclusion with its resultant retruding chin.

CASE HISTORY

A 10½ year old white male was admitted to the Children's Hospital of Philadelphia to correct the existing dental condition. The patient displayed features of old age. He weighed 44 pounds and was 31 inches tall. Hair on the scalp and body was absent with the exception of a fuzz in the suboccipital region. No eyebrows were evident. The skin was dry, thin and mottled with brown pigmented areas. The scalp displayed prominent superficial veins. The head appeared large but in these cases, one finds a normal size head on a small body.

The mouth showed badly broken

FIGURE 12. Roentgenograms of the maxillary and mandibular area when patient was first admitted to hospital. Note the fully formed roots of the permanent teeth. This condition is similar to cleidocranial dysostosis.

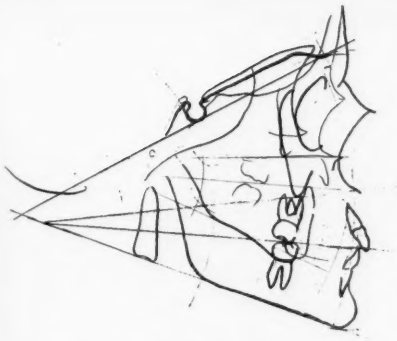

FIGURE 13. Cephalometric roentgenogram tracings compare growth and development of this progeria patient to the average jaw growth and development in an average normal patient utilizing the Sassouni analysis. Tracings are placed on each other with the sella turcica and baseline for identification landmarks.

down teeth as well as over-retention of the primary dentition. At 10½ years of age, the only permanent teeth erupted were the lower central incisors. This retarded eruption of the permanent teeth and over-retention of the primary dentition is characteristic of that seen in cleidocranial dysostosis. The short ramus of the mandible, the obtuse angle of the ramus (155°), and the receded mandible produced a severe Class II malocclusion which accounted for the inability of the patient to open his mouth very wide.

The permanent mandibular central incisors had erupted lingually. The primary teeth were firmly attached to the gingival tissues and showed no evidence of mobility.

Dental roentgenograms revealed a full complement of permanent teeth beneath their respective primary predecessors. The roots of the lower first molars were almost fully formed, and the upper incisors were almost completed rootwise. The remaining permanent teeth followed their normal root-completion time table.

Under general anesthesia in the operating room, the lower right second primary molar and the upper right and left first primary molar teeth were prepared for filling. The pulps in these teeth had receded considerably, and the dentin did not have the appearance and vitality seen in young teeth. The pulpal floor was very deep. Extractions were performed where indicated. The extracted teeth were embedded in celloidin and histologic sections showed a tremendous amount of secondary dentin present, along with marked recession of the pulp similar to that seen in old age or from attrition and trauma.

Postoperative examinations showed that at the end of one year the permanent teeth still had not erupted, and were in the same condition as when the hospital dentistry was performed. Areas where extractions were done were still not completely healed. Impressions were taken for partial dentures.

The cardiovascular system showed arteriosclerotic changes normally associated with old age.

Histologic Section: Coronal portion of central incisor showed an unusual amount of irregular secondary dentin beneath which pulp cells appeared atrophic. In central area, pyknotic odontoblasts beneath secondary predentin had assumed squamous shape.

General Growth: Charts demonstrated general growth at 4.1 years and at 10.8 years. At 4.1 years, patient was very small but at 10.8 years he was even

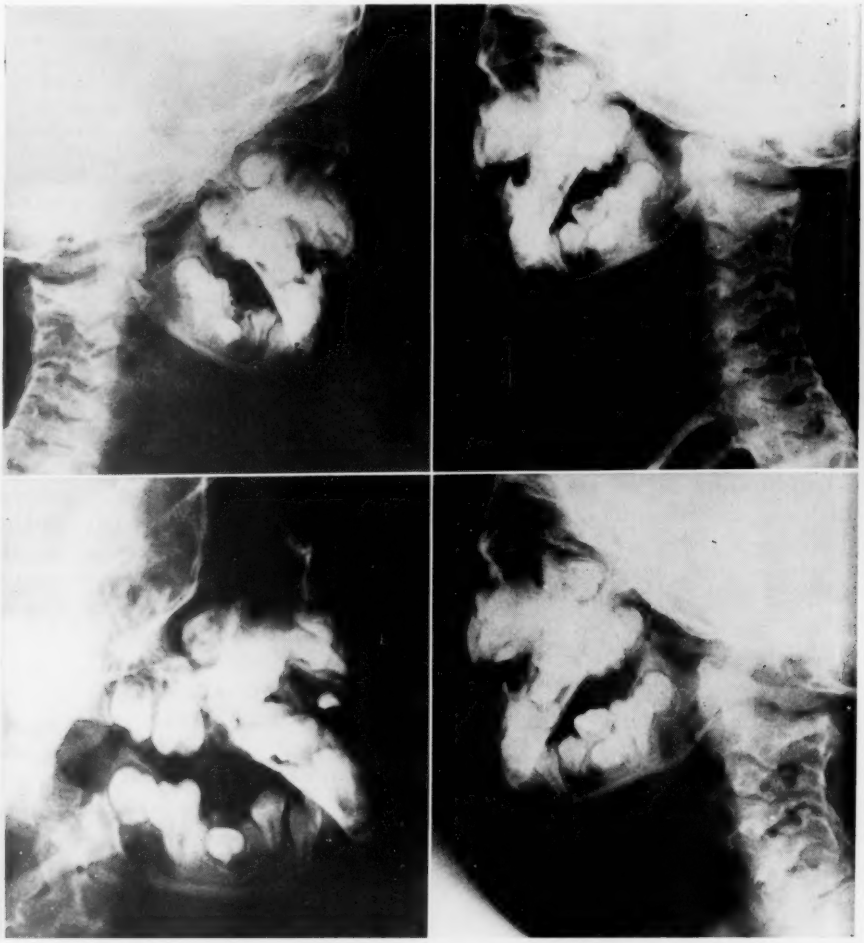

FIGURE 14. Oblique roentgenograms of right and left sides of mandible showing mouth before and after dental treatment following first hospital admittance in 1957. Observe unerupted permanent teeth and their crown and root development.

smaller. This is a record of progressive and cumulative failure. At 4.1 years, he was the smallest 1 in *100*. At 10.8 years, he was the smallest 1 in *1,000*. This is important as a record of progressive growth failure.

Cephalometric measurements at 10.8 years show he was retarded in eruptive age. He had a very small face. The heights showed a totally small face but there was growth retardation in the upper heights more than in the lower. Breadths were uniformly narrow. The depth dimensions showed a small progressively retrusive face. The measurements of the mandible showed that most

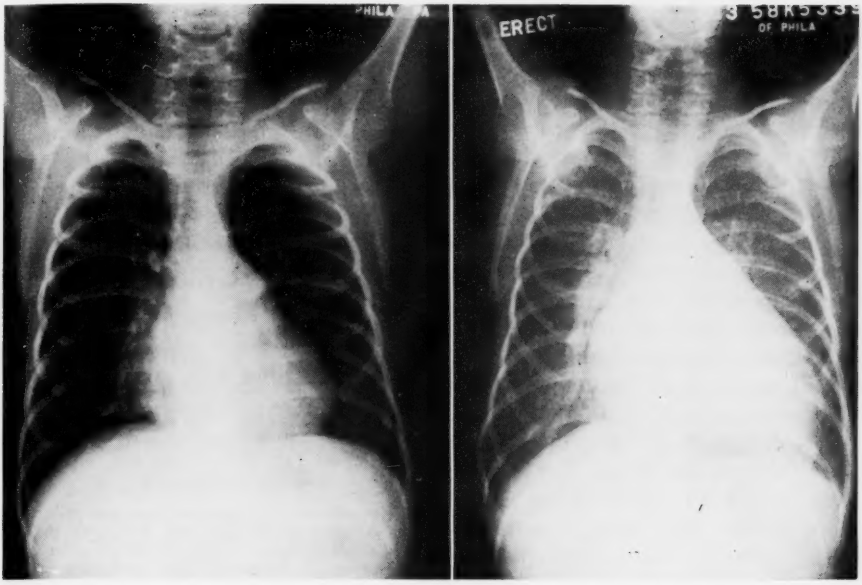

FIGURE 15. The thoracic cage reveals slender, delicate ribs with partially healed fractures of the posterior portion of the right third and fourth ribs. Clavicles are slender and shortened at distal ends.
(a) Appearance of heart when first admitted to Children's Hospital 3-11-57.
(b) Patient in heart failure when readmitted to hospital 9-7-58.

of the trouble was there. The corpus (gonion to gnathion) was very short as was ramal height. The charts emphasize the small disproportionate face this boy possessed.

Utilizing the cephalometric measurements taken at 10.8 years and the graphing of the cephalometric measurements at 4.1 years and at 10.8 years, you will observe very little actual growth in the face between those years. This is in keeping with the progressive growth

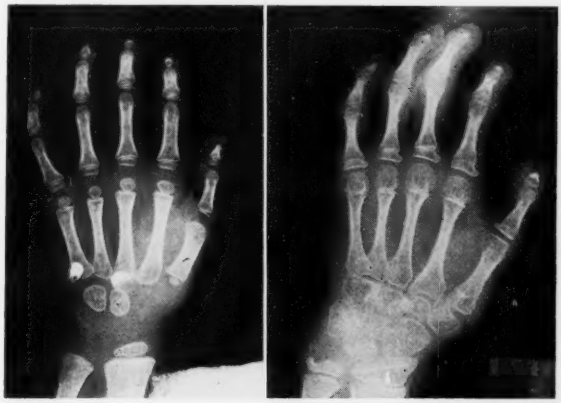

FIGURE 16. Carpal roentgenograms of left hand at 4.0 years (a) and at 10.8 years. (b) In the former x-ray there is retardation of about two years. The last studies shown his over-all carpal development to be slightly beyond his chronological age. Notice the tapered appearance of the terminal phalanges. There is fusion of the epiphyses of the terminal and middle phalanges.

failure that was pointed out earlier. Secondly you can compare this patient at 10.8 years with a normal child, who closely resembles what is called the normal mean for that age. The comparison will demonstrate the extent to which the patient's facial growth was generally and disproportionately retarded.

The tracings are based upon lateral x-ray films, employing a Sassouni analysis. The principle of this analysis is that of proportionality. Cephalofacial and cephalodental relationships are demonstrated on an individual basis. Everything suggests that this patient was greatly retarded in physical growth.

At 4.1 years this patient had a carpal bone age of 3.7 years trailing to 2.3 years. At 10.8 years he had an overall carpal age of 12.3 years. This represents a very interesting situation. His smaller size and growth failure would suggest hypopituitarism but there is no effect upon rate of maturation.

Laboratory Tests: Serum calcium 10.3 mg. per cent, serum phosphorous 4.7 per cent, phosphatase 3.7 Bodansky units, and non-protein-nitrogen 14.0 mg. per cent.

Recent Hospitalization

Patient re-admitted to Children's Hospital for heart failure and malnutrition. He had lost 6 pounds during the past six months, and was on a downward grade. Patient was digitalized after being in the hospital seven days. Partial upper and lower dentures were inserted to assist in mastication of food.

Conclusion

This is a presentation of a dental and cephalofacial study concerned with a most interesting but little understood disease.

Medical Arts Bldg.
Jenkintown, Pa.

Bibliography

1. Hutchinson, J., Congenital Absence of Hair, with Atrophic Condition of Skin, Med. Chir. Tr. 69:-475-477, 1886.
2. Gilford, H., Progeria, a Form of Senility, Practitioner 73:188-217, 1904.
3. Atkins, J., Progeria; Report of a Case with Post-Mortem Findings, New England J. Med. 250:-1065-1069, 1954.
4. Wilkins, L., Endocrine Disorders in Childhood and Adolescence, ed. 2, Springfield, Ill., 1957, Charles C Thomas, Publisher, p. 178.
5. Talbot, N. B., Butler, A. M., Pratt, E. L., MacLachlan, E. A., and Tannheimer, J., Progeria; Clinical, Metabolic, and Pathologic Studies on a Patient, Am. J. Dis. Child. 69:267-279, 1945.
6. Album, M. M. and Hope, J. W., Progeria, Report of a Case, Jr. Oral Surg., Oral Med., and Oral Path. 11:985-998, Sept. 1958.

Are You Moving Soon?

One of the most difficult problems of the Central Office is the maintenance of the accurate and current set of address plates for prompt delivery of the JOURNAL. Unlike First Class Mail which will follow the addressee to his new address, the JOURNAL is mailed Second Class and most copies which are addressed to the old address are simply thrown into the waste basket and burned by the Post Office. Not enough copies are printed to replace to members all of these lost and burned issues.

The JOURNAL OF DENTISTRY FOR CHILDREN has become established as the finest reference work in the world for current thought and scientific information on Dentistry for Children. If you value receiving each and every copy of the JOURNAL please advise the Executive Secretary at least ONE MONTH IN ADVANCE of your MOVING. The following information is required to properly process your change:

1. Your NAME and COMPLETE OLD ADDRESS.
2. Date of change.
3. Your NAME and NEW ADDRESS, typewritten or PRINTED legibly. Always include your POSTAL ZONE NUMBER and the name of the large city of which your municipality is a suburb.
4. Your status as a subscriber, member of a State Unit, Member-at-Large, Member as a Student or Award Winner, etc., facilitates identification when there is a duplication or similarity of names.
5. Your Postman will supply a convenient address change card.

For your information, the new address plates are being coded in the following manner:

M U indicates a MEMBER of a State UNIT
M L MEMBER-at-LARGE
M S MEMBER, STUDENT
M A MEMBER, ASSOCIATE
A W 5960 AWARD WINNER in 1959 with subscription extended through 1960
S D Subscription Direct
S A Subscription through an Agency
S L D Subscription of a Library, direct
S L A Subscription of a Library through an Agency.

Please send all changes to the new central office:

AMERICAN SOCIETY OF DENTISTRY FOR CHILDREN
DR. C. F. TUMA, *Executive Secretary*
13201 Miles Avenue
Cleveland 5, Ohio

Unit News

EDITOR'S NOTE:

With this issue of our JOURNAL, *Ted Levitas will conclude his term as Unit News Editor. Ted has done a remarkable job for all of us, and in that slow Southern manner of his, has guilelessly awakened Unit News correspondents to their greatest activity in years!*

*There has been much personal pleasure to me in working with Ted and perhaps when his current extra-*JOURNAL *activities taper off, we can ask him to take on another assignment.*

Big Tiny Konikow of Royal Oak, Michigan, will be our new Unit News editor. We hope you correspondents will be just as active with Tiny at the helm as you were with Ted. Please send your material to him promptly.

For a job well done, Ted Levitas, thank you!

A.E.S.

MAN! My face is really red! Missed the deadline *altogether* this time. (You'd think a third child wouldn't leave you all shook up!) But here we are in print after all—thanks to the speedy help of my correspondents and the forbearance of Editor Al.

So lend an eye and see what's what.

ARKANSAS

Razorback Basil Gibbs carved out some neat copy, to wit:

The Arkansas Unit had a very good meeting in connection with the 71st annual meeting of the Arkansas State Dental Association in Little Rock, April 12, 13, 14, 1959.

We had a total of 50 attending the breakfast at which time the following officers were elected:

President . Maurice J. Friedman, Little Rock
Vice-President .... D. E. Newberry, Osceola
Secretary-Treasurer .. Basil Gibbs, Star City

Board

Central ..... Robert Malcolm, Little Rock
Northeast ..... Phil Deal, Earle
Northwest ..... Ralph Bowers, Harrison
Southeast ..... Jim Bisbee, Stuttgart
Southwest ..... Horace N. Beene, Magnolia

After our business was transacted, Dr. Jim McKnight gave an excellent presentation on "Preventive Orthodontics in the General Practitioners' Office." His presentation was so enthusiastically received it was discussed and suggested we have him again for a full day on the same topic. Dr. McKnight brought several of the dentists with him from Memphis who were taking the postgraduate course in pedodontics.

Our Unit has gone on record to make a special effort to have all members of the State Dental Assistants association present at all of our scientific sessions. We feel that the dental assistants play a very important role in all dental offices,

but we especially feel that some of their most important work is with children.

Several of our members are looking forward with great anticipation to the ASDC sessions both scientific and social in connection with the meeting of the ADA in New York City in September.

Northern California

Claude "Tongue-in-Cheek" Warden (R., Calif.), comments that had he known Yours Truly (D., Ga.), was one of *those*, he might not have written at all. Furthermore, says he, ". . . without your party, mine wouldn't look so good. . . ." Of course, he really has his pronouns swapped around. Truth of the matter is, the present "outs" looked so good so long, they felt the only cricket thing would be to let the other side have a go at it. But, as we all know, that didn't work so "There'll be some changes made. . . ."

Enough politics; back to dentistry. Friend Claude has this to report:

Our secretary, Lee Winters, has just completed and distributed a new roster of our Unit. This is done annually and includes both an alphabetical listing of each member and an alphabetical listing by city in which they practice. It provides us with a ready reference to our members for referral purposes which is of great assistance both to us and to our patients.

Our fourth annual pedodontic Seminar will be over-subscribed at the rate of present sign-ups. The theme this year is Practice Administration and our headliners are of national and international fame. Wives are invited and have their own program arranged. We expect approximately 80 couples in attendance. Ed Mack, our chairman this year, should be complimented for the excellent quality of the leg-work he has done for us.

Summer is just about upon us here. My wife and I went water skiing as early as mid-April and everyone else in our Unit is equally eager for the summer festivities. We are getting a new boat in a few weeks and hope to have a good many miles on it by the time you buy me that beer in New York. (Note: See 1st Quarter, JASDC.)

Maury Massler was here for our Unit's specialty breakfast at the recently held California State Dental Association meeting. He was also a headliner for the Pedodontic Section of the meeting. Maury is always greeted with a lot of enthusiasm here and it is truly a pleasure to have him.

Southern California

Reliable Miss Lorraine Duncan, the Unit's executive secretary, continues to do a fine job of keeping me informed.

President Robert Read and membership chairman Ronald Jones collaborated on a letter to prospects in March and, thus far, have picked up no less than 60 new members. It is an excellent "pitch" for members, and I'm sure Miss Duncan (at 3780 Wilshire Boulevard, Los Angeles 5) would be happy to send you a sample.

Dr. Maury Massler spoke to the Unit in April on "Acute Herpetic Stomatitis in Children." His talk was highlighted by comments on the dangers of mistreatment with penicillin. Their annual Post-Graduate Conference was held May 24-27, and the election of officers will be held at the June meeting.

A special word of welcome goes out to the following newcomers: Gayle Stuart Alden, Clarence K. Baker, Neil J. Bourquin, Paul Ehrlich, Gilbert C. N. Halm, Gerald Leishman, Harold A. Mathieson, Steven Lusko, Robert James Saffian, Ronald E. Strauss, Lawrence J. Warner,

Thomas E. Wright, Robert Scott Heim, Ward Gerald Kelsay, L. Charles Larsen, Donald E. MacWhirter, Donald W. Neirl, Ronald James Wong, and Ronald G. Wolf. More names will be published as they are sent in. Welcome, all!

Florida

Editor John Tabak keeps me posted on news from the Sunshine State through the *Bulletin* he edits for the Unit. And he crams a lot into a little.

Election of officers was held in May. The nominating committee proposed the following slate: President—Vic Lenchner, Miami Beach (remember the Turtle Room in Dallas?); President-elect—Jerry Halker, Homestead; Vice-president—Charlie Fain, Daytona Beach; Secretary-treasurer—John Tabak, Miami (efficiency plus!); Editor—Neil Powell, Orlando (another Emory man makes the Big Time!); and Junior Director—Morcie Smith, St. Petersburg. If politics upsets the applecart, the results will be published next quarter.

Members Bunch, Sunlen, Tabak, and Poirrier presented table clinics in May at the Florida State Dental Society meeting. Frances Glenn spoke in May to the Greater Pensacola Dental Society on "Behavior Patterns of the Child Dental Patient." John Gobbel, Lew Marchand, Neil Powell, Morcie Smith, and Charlie Fain will spend at least part of the Summer in Chapel Hill, North Carolina, taking p.g. (no it doesn't stand for pregnant!) courses. Jerry Halker is busy in Homestead stumping for fluoridation. Good luck, old man. It won't be easy; *I* know!

Georgia

Biggest news from the Empire state of the South is of the recent marriage of Virginia Englett. She is now Mrs. Hugh Pickering. Took everybody by surprise! Best wishes from us all, ma'am.

Plans are well underway for the Fall seminar. This year it will be held during the first weekend in October once again at beautiful Ida Cason Callaway Gardens. Roy Lindahl from the University of North Carolina will be the featured clinician. In addition, several Unit members will present case reports. President T. Eros has his committees well organized, and another great meeting is anticipated.

We are all glad to know that Mary Lynn Morgan and Joe Meadows have recovered from recent surgery. Marvin Goldstein was installed as vice president of the Fifth District Dental Society. Ted Levitas, who has just announced the limiting of his practitce to pedodontics, will speak to the Eastern District Dental Society in Augusta in July. His lecture is titled "Let There Be Light" and has to do with radiography and radiation.

Idaho

Wes Young rings the bell again as follows:

The Fourth Annual Meeting of the Idaho Unit is to be held at McCall, Idaho, on June 20 and 21. The program is being provided by Dr. Donald Porter and the Spokane Pedodontic Study Club. The scientific program will be in the nature of a series of table clinics.

For the first time, the Idaho Unit is planning to have its own social hour and banquet immediately preceding the meeting. The meeting will close with a luncheon and the annual business meeting. Frank Hyke of Lewiston, President-Elect, has been in charge of the program. The current President is Dale Ablin of Boise.

INDIANA

Betty Graves reports as follows:

The Indiana Unit's first conference on Dentistry for Children was a huge success due to a fine committee headed by Arthur Klein, an excellent seminar program led by the superlative Irwin Beechen, the facilities of the Frenck Lick-Sheraton Hotel and the attendence of thirty seven dentists plus several wives. It was *not* due to the weather which to put it midly was "lousy"! We were very pleased to have as our guests several members of the Ohio Unit and their wives. Our banquet on Sunday night was followed by a most timely and interesting discussion by Robert Kryter on "Space, Sputniks, and You." He is an expert in this field but can explain it so even I now understand how a satellite is placed in orbit and why!

Our seminar program was scheduled to run from 8:30 to 12:30 on Monday and Tuesday but Irwin Beechen had so much excellent material to present and we were all so anxious to hear it, we "over sat" this time limit gladly. Emory Bryan, who is President of our Unit, and our committee wisely planned strategic coffee-breaks and to ensure everyone returning and arriving on time gave several door-prizes such as spinning reels, lighters, etc.

The afternoons were free for golf, horseback riding, skeet shooting, mineral baths, etc. As previously stated however, the weather cut these activities considerably, although many braved the elements and no cases of pneumonia were reported. The wives attending were taken on a tour of a local Jesuit Seminary and said it was most interesting.

I had not meant to go on so long but it was such a stimulating meeting that when I started writing I couldn't stop. Since the conference was met with such enthusiasm, I feel certain it will be an annual affair.

The accompanying picture was taken at the conference and the people are, facing the camera, left to right, Irwin Beechen, headliner, Elizabeth Graves, Ralph McDonald, and Arthur Klein, committee chairman.

MARYLAND

Wow! John Sharpley started dictating and couldn't stop. Those fellows have been busy. Let's see what John had to say:

The Maryland Society of Dentistry for Children held its 10th annual meeting on Tuesday, May 5, 1959, during the regular annual session of the Maryland State Dental Association.

Dr. Douglas J. Sanders, Director of the Department of Pedodontics, of the Baltimore College of Dental Surgery, University of Maryland, presented a Clinic at the luncheon with the experts: "Preventive Procedures in Pedodontics." Doug had a full table at both sessions of the Clinic on May 5.

On May 6, four of our members presented a projected clinic on pedodontics after which a panel discussion was held. Dr. Benjamin S. Crosby, Jr., was the moderator. The panel was composed of the following: Dr. Ralph Kercheval, "Restoration of Fractured Anteriors"; Dr. Fred Erhlich, "Space Maintainers and Their Uses"; Dr. Douglas Sanders, "A Case Report of Amelogenesis Imperfecta and Treatment for an 11 Year Old Boy"; Dr. Saul Blumenthal, "Child Patient Management."

The Society held its first annual Sports Dinner Meeting, on Tuesday Evening, May 5, during which time the subject of Dentistry was *entirely* forbidden.

The Meeting was called to order by Dr. Sanders, President, and all business other than the election of officers for the year 1959-60, was dispensed with. Reports of the various committees will be published in the June *Bulletin*.

The officers elected for 1959-1960 are:

Saul M. Blumenthal ..... President
Wm. Schunick ..... President-Elect
Allie Skib ..... Vice-President
John H. Sharpley ..... Secretary-Treasurer
Arthur Bushey ..... Executive Council

Dr. Sanders introduced Dr. Donald Kramer as our Toastmaster for the evening, who presented as our first speaker, Mr. J. Frank Cashen, Sports Writer, whose subject was "Base Ball." Following this, Mr. Donald Kellert, was presented who spoke briefly on Pro-Football, and then projected a sound film, "The Baltimore Colts, Pro-Football Champions for 1958."

Mr. Cashen and Mr. Kellert were well received and their efforts were greatly appreciated by those attending the dinner.

Our Society has had a very good year. Quarterly meetings have been well attended, and excellent essayists have been presented. In September, Dr. Irving Abramson, Professor of Endodontics, Dental College, University of Maryland, presented a paper, "Traumatic Injuries of the Teeth From Age 6-16." In November we had the pleasure of presenting Dr. Sidney I. Kohn, of the Dental School, Fairleigh-Dickinson College, whose subject was "Interceptive Orthodontics for the Pedodontist." In April, Dr. Z. Bernard Lloyd, of the Dental School, Georgetown University, discussed "Serial Extractions."

On May 24, we cooperated in the sponsoring of an all day Seminar in Pedodontics, with the Department of Pedodontics, Dental College, University of Maryland. The registration for this was very good.

Our active membership was increased this year by 31 new members. Working with the Pedodontic Department of the Dental School, we enrolled 52 student members, giving us a total of 197 active and student members.

During June Week at the time special

awards are presented to the graduates of '59 our Society presented an award for outstanding excellence in Clinical Pedodontics.

The success of our Society during the year has been due to the wholehearted cooperation of not only the officers, but also of the entire membership of the Society. Be seeing you in New York at the Annual Meeting.

Massachusetts

Best news from Bob Kirschbaum is that membership in his Unit is now 156 with thanks from all to membership chairman Stan Kaufman.

The March meeting was held in Dedham with Dr. Frederick J. Stare, professor of nutrition at the Harvard Medical School, as the speaker. His subject was "Nutrition and Dentistry" which covered many of the problems related to general health, disease and growth and development.

Mel Noonan, Birmingham, Mich., was the speaker during the Unit's annual meeting in May. His subject was "Problems With Humans." Bob describes Mel as follows, "If Mel ever tires of dentistry, his future is assured as a TV comedian." Pretty good recommendation.

New officers are: President—Louis Calisti, Brookline; Vice-president—Robert Diamond, Boston; and Secretary—Mel Gulbrandsen, Wellesley.

Minnesota

"Rocky" Schwarzrock couldn't possibly let me down—and he didn't. Look:

The annual dinner meeting of the Minnesota Unit, with wives and/or girl friends chaperoning, was thoroughly enjoyed. Along with the usual excellent turnout, the filet mignons vied for first place with the puppet show presented by the St. Paul Women's Dental Auxiliary. A grand evening, on May 19!

Officers for the coming year are as follows:

Walt Iverson	President
Ray Petersen	Vice-president
Ned Brown	Secretary
Jerry Ulrich	Treasurer

Now is the time, also, to begin to blow the horn for our big One-Day Meeting scheduled for September 24. The meeting will be held, as before, at the Mayo Memorial Hospital Auditorium on the campus of the University of Minnesota. Dr. Francis W. Summers of Los Angeles will speak on the "Approach to the First Visit of the Child Patient, and the Problems of Child Management." Dr. Manny Album of Jenkintown (Philadelphia) will speak on "Premedication of the Child Patient and How to Make Dentistry for Children Financially Successful."

The Minnesota Unit Award of $25 for outstanding work in dentistry for children to a senior dental student was presented to Thomas Malmend. The awards of membership and certificate from the American Society of Dentistry for Children were presented to Raymond Garland and David Longworth.

Missouri

(St. Louis Component)

Ed Brungard has been determined to "Show Me" he has a sense of humor and can write a good report. I concede on both counts! See for yourself:

Old business: The panel program for senior students, held at St. Louis University, turned out to be the best of the three we have had. Vern Cherry, Harry Dalin, Roger Parrott, and Roy Wolff were the panel members. Topic for the evening was "Modern Trends in Office Arranging and Equipping." Dalin's com-

ments on time studies and motion studies were most interesting. ("Time and motion" is one of those phrases no self-respecting lecturer on practice management would forget to use; Harry is the first one I have heard explain it.) General consensus: arrangement of the office is a highly personal and individual problem—but it can be solved profitably by scientific methods. Also, there are scientific changes to come in operatory equipment design as more and more dentists demand improvement.

New officers: At the state meeting in Springfield, Quent Ringenberg was elected president, I was made vice-president, Bo Shanley secretary-treasurer, and John Durham corresponding secretary. At this meeting Jack Gilster read a preliminary report of the committee studying Strontium 90 fallout by testing the content of this radioactive element in extracted primary teeth. More detailed information should be forthcoming.

Where are our wandering boys: Roy Wolff goes to Bedford Springs, Pennsylvania, to give a weekend program on practice administration soon. Then back to St. Louis and work on Monday, and off to Indiana to present a paper Tuesday at the Indiana State Meeting. Happy to see classmate Jim Fleege, sometime of Washington, snuggling up to a bourbon and water in one of the pictures you printed last quarter. Jimbo doesn't look nearly so worried now as he used to be.

Gil Zoeller presented an excellent program in the St. Louis Dental Society's bi-weekly television series. He spoke on injuries to the teeth of children.

New York

Not only did I goof on the deadline, but also I goofed on some addresses. So we hear from Charlie Beck again who, in the interest of time, is pinchhitting for Walt Woods way up in Syracuse. Thanks, Charlie—and please explain to Walt. Now this is what erstwhile reporter Beck reports:

At the annual meeting of the New York Unit held in Albany the membership elected the new officers and Executive Council members for the next year. The officers are as follows:

President ..... Arnold Rosenberg, Yonkers
President-elect .. Roland Hawes, Rochester
Vice-president ... Charles Beck, Tarrytown
Secretary-Treasurer Walter Woods, Syracuse
Editor .. Joseph Kauffmann, New York City

Due to the increasing size of our Unit it was decided to enlarge the size of the executive council from 15 members to 18, thus allowing a better representation from all sections of the state. New members of the council are Harry Sultz, Robert Clyman, Stanley Hoch, Mark Wallach, Harold Klein, and Leigh Fadden.

The council decided on holding the Fall meeting in the area of Binghamton where we will enjoy the hospitality of Bob Lacey and his committee. The annual meeting is planned for the Buffalo section in the Spring of 1960.

The most anticipated event of the year—the national convention—is now rapidly reaching the "planned" stage. M. Joel Freedman's leadership has been inspirational and the program indicates the job that has been done. My only complaint is that I won't be able to attend everything. Anyone missing the ASDC meeting in New York in September will be deprived of a real treat in the field of Dentistry for Children.

North Carolina

So many people are dependable. Roy Lindahl is another one. Peruse his efforts:

The Fifth Annual Seminar of the North Carolina Unit was held in Chapel

Hill with Mel Noonan of Birmingham, Michigan, as the featured speaker. Mel discussed "Treatment of Injuries to Anterior Teeth" and "Practice Management" and was very well received by the members and guests in attendance. We all enjoyed his presentation and his new ideas. Several of the members presented table clinics which were well prepared and presented. It was very stimulating to see the enthusiasm which these clinicians manifested in their discussions. Another highlight of the meeting was a seminar on the use of hypnosis in dentistry for children which was presented by one of the members of the Unit. Following conclusion of the events of the day everyone agreed the program was a success.

We are busy at present with our plans for our first two-day seminar which will be held in Charlotte November 6-7, 1959, at which time we plan to have an outstanding clinician who will discuss "Practice Management as It Relates to Dentistry for Children." We look forward to a very informative and profitable experience.

Ohio

W. C. Schwelles in Dayton relied on his own trusty pen to expedite matters and bring us up to date on Dayton Section doings.

Both Dr. Starkey and Dr. Huffman visited Western Reserve and Ohio State Dental Schools in March and April to speak to the seniors. They lost no time in plugging ASDC.

Dr. Ralph McDonald and Dr. John Muhler spoke to the Dayton Section in April. They brought valuable information about the use of stannous fluoride. According to the noted researchers, SnF_2 is twice as effective as sodium fluoride—and they backed up their claims.

Oklahoma

Ed Smith brings us up to date about our "Sooner" group:

The first of an annual program was presented in Tulsa at the Mayo Hotel on February 4 in conjunction with the Tulsa County Dental Society.

Dr. Ben Rabinowitch, of Los Angeles, California, was our guest speaker and clinician. It was an all day and evening program. Dr. Ben was full of good information and parted with it freely for the benefit of all of us present. The program was very good and we are looking forward to more meetings of this type.

Pennsylvania

Manny Album seems to stay busier than that well-known paper hanger (he is chairman of the 1961 ASDC meeting in Philly; Ray Werther is coordinator)—but he's never too busy to stop and write me a few words. Many thanks, friend, and I hope they *all* read your prose:

Our Unit staged a weekend meeting

(Frank Gardner of Scranton and his super Camera took the pictures.)

Figure 1. (Left to right) Roy Wolff of St. Louis, Clinician of the meeting; Mort Winkler, President-Elect from Pittsburgh; Tom Check from Norristown; Manny Album, President from Jenkintown; and Harold Addelston, ASDC National President from New York. All discussing fluoridated spirits found at the hotel!!

FIGURE 2. (Left to right) Seated at the head table are Roy Wolff, Norma Addelston, Hal Addelston, Shirley and Manny Album, Lil and Mort Winkler, and Muriel and Bob Spangler.

FIGURE 3. (Left to right) Dr. and Mrs. Wil Waller of Pittsburgh, Sis and Ray Werther from Wynnewood, Rita and Ben Kimmelman of Philadelphia, and Bernice and Ben Grossman from Philadelphia, all enjoying their dinner. Ben Grossman is the new Secretary of the Pennsylvania Unit.

at Bedford Springs Hotel in historic and picturesque Bedford. This was the first time that a weekend meeting was formulated. The attendance was tremendous with reservations for some 100 people.

Table Clinics were put on by Ben Kimmelman and Andrew Michanowicz in addition to Gerald Feeney, Robert Greene, Robert Tisot, and Peter Walsh, students at Pennsylvania and Pittsburgh.

Roy Wolff was the featured speaker. Roy gave a wonderful presentation on "Office and Patient Management of the Child Patient."

National President Harold Addelston and his wife were the guests of the Pennsylvania Unit.

Mort Winkler took over the gavel as President for the coming year.

RHODE ISLAND

Dinner, election of officers and a fine program were scheduled for the May meeting in Providence. Lee C. Nathans has been nominated for president (congrats, friend!). Also named are Herbert J. Underhill, vice president, and Richard J. Whelan, secretary-treasurer. (Like I said before, should some "unknown" slip in, his name will appear next time.)

Dr. William A. Verlin, from the department of pedodontics at Columbia was the speaker. He committed himself to a rather prodigious undertaking choosing as his subject "Dentistry for Children—Including Diagnosis, Treatment Planning, and Operative Procedures."

TENNESSEE

Correspondent Harold Meacham continues to represent those Volunteers in an admirable fashion. Observe:

The Tennessee Society of Dentistry for Children had its annual meeting May 11, 1959, in Nashville. Ben F. Gunter from Nashville did an excellent job with the program. Dr. Sidney Finn from the Dental School, University of Alabama, was our main speaker and gave an excellent clinic. At our luncheon, a local psychiatrist, Dr. Robert Foote, was our speaker. Both programs were well attended and very informative.

Our new officers are:

President .... Robert F. Taylor, Memphis
Vice-Pres. Harold C. Meacham, Jr., Nashville
Secy.-Treas. . James P. McKnight, Memphis

Our membership has increased from 94 to 125, and, at the present time, we have three local Sections formed here in Tennessee—in Memphis, Chattanooga and Nashville.

Texas

Farewell to Harold Scott who turns over his typewriter to the new secretary-treasurer, Terry Downs, as Harold moves up to the office of president. Charles Maxwell (No, not the Detroit ball player!) is the new veep. But now, let's read Scotty's last communique:

This will be the last news letter from Sherman (if you will pardon the name). As you might expect Sherman is in "North" Texas. (Man! with a name like that, you're lucky your news gets in!).

Our annual meeting, May 3, in San Antonio was a huge success thanks to the fine arrangements made by Dr. Cathey and Dr. Raffkind and our clinicians Drs. Simmons, Yates, Cash, and Steiger. We had 60 members register for the meeting which is excellent considering the distance we have to travel in Texas.

M. M. Sharpe stepped out as president and was recognized by the Texas Unit for his fine work during the past three years as Secretary-Treasurer and President. During these three years our membership has grown from 50 to 155.

Our next annual meeting will be in Fort Worth.

Washington

Those fellows in the Northwest sure picked a winner. Rolland Woofter is doing a great job. So, to him, I say, "Don't stop"! and to you, "Read on":

That deadline certainly rolled around in a hurry! Speakers, meetings, dates, arrangements, patients, plaques, new members, dates, meetings, *ad infinitum!!!* But things do seem to fall into place when given the proper push.

April 4 found a goodly number of the Washington Unit assembled in Seattle for an informal chat with Dr. Walter T. McFall. That man certainly has an unlimited supply of that "Ole Southern Hospitality." This meeting was on the eve of the Washington State Dental Convention at which Dr. McFall was to speak. As word got around that McFall was terrific—the auditorium was filled including standing room. His enthusiasm for ASDC certainly helped to get our membership drive off to a roaring start. The Unit had a commercial booth with appropriate signs which it staffed with enthusiastic boosters. (Ed. Note: Great idea!) The tally is not complete but it is estimated that we signed up about 80 new members plus re-instating a few. A letter with application attached was prepared pointing out a few highlights of our affairs and inviting the reader to join us. All new members are to get a beautiful plaque (present members may order one also) ready for hanging as evidence to all that they are especially interested in dentistry for children. We are enthusiastic; we want enthusiastic new members—it could start an epidemic.

Our next meeting, held June 22 at Yakima, presented Maurice E. Bryant, M.D., who spoke on "Hyponodontics."

Plans are well along for the Pacific Northwest Conference Meeting which the Washington Unit is hosting at Harrison Hot Springs.

I would like to extend an invitation to all of you to take a vacation up this way the last of September and join us for unequalled fun, food and a favorite clinician. A note to 2640 W. Bruneau Place, Kennewick, Washington,

will bring all the particulars. Why not join us?

Wisconsin

"Orthodontics for the Non-Orthodontist" was the title of the lecture Dr. Robert E. Moyers, Michigan School of Dentistry, presented to the Unit. Another highlight of the annual meeting was the recognition given to the past presidents of the Wisconsin Unit.

New officers are as follows: W. N. Newby, president; L. B. Crosby, president-elect; Hames Helz, vice-president; Fred Druse, secretary-treasurer; Leslie Dodson, council member for three years; and C. W. Thielke, E. A. Fetting, R. L. Heller, K. A. Nockerts, C. A. Frey, L. J. Flatley, F. J. Fleege, and E. A. Merkel, board members.

Epilogue

Well, my friends, this brings to an end a two year tour of duty as Unit News Editor for this rebel writer. "Duty" is perhaps an unfortunate word. In all sincerity, this has been a labor of love. When I pecked out my first column, I was truly a neophyte in ASDC ranks. In the months since then, I have come to know, if only by the sign of their miserable typing techniques (which are *all* better than mine!) wonderful folks from all over the country.

This present issue presents a case in point. Like I said at the top, I missed the deadline completely. But you should have seen the response from around the country. Telegrams telling me not to worry—copy was on the way; air mail letters, special delivery letters—and even an airmail card from Is Voda apologizing for not having any news! Everybody wanted to help. They did—and they have for the last two years.

To all of you who have said the many nice things, you know my thanks are given. And the same to those of you who have made the job so easy. To Tiny Konikow of Michigan, my successor, best of luck. To Editor Al Seyler, who made all this possible for me, simply thanks.

So before the old infernal writing machine collapses from the weight of my mush—sincere mush—this is "30." See "you all" in New York.

Shalom!

Ted Levitas

Material intended for Unit News should be sent to Dr. Zalman Konikow, 500 S. Washington Ave., Royal Oak, Michigan. Deadline dates are: First Quarter, January 25; Second Quarter, April 25; Third Quarter, July 25; Fourth Quarter, October 25.

Anomalous Pulp Horn Extension—Case Report

EMMETT R. COSTICH, D.D.S., PH.D.*

THE dentist may frequently be confronted with the death of the pulp following operative dentistry. Occasionally he is at a loss to explain this phenomenon since the operation may have been a minor cavity preparation without excessive generation of heat by the rotating instruments.

The following report of the anomalous extension of an incisor pulp horn, well into the dentin, may help to explain some of these unusual and unexpected pulp deaths.

REPORT OF CASE

A four year old white female child was seen with a chief complaint of moderate swelling in the mandibular symphysis area with some loosening of the primary teeth. Roentgenographic examination of the area revealed a three centimeter radiolucent area in the midline with displacement of two developing permanent incisors to the inferior border of the mandible. A soft tissue mass was removed from this area with the associated displaced incisor teeth and histological examination revealed the mass to be an ameloblastoma. The permanent teeth that had been removed in association with this tumor were formalin-fixed, decalcified, embedded in celloidin and serial sectioned in a mesial-distal plane. The sections were 10 microns in thickness and stained with hematoxylin and eosin. The object of this study was to determine the effect of the displacement, by the ameloblastoma, on the development of the pulp and hard structures of the tooth. General

FIGURE 1. A low power photomicrograph showing the lateral pulp horn extension into the dentin (30 x).

* Associate Professor of Dentistry, School of Dentistry, University of Michigan, Ann Arbor, Michigan.

development appeared normal for the patient's age and there was no invasion of the pulp chamber by the tumor. In one specimen it was noted that there was an unusual extension of the lateral pulp horn well into the dentin and it was possible to see a capillary with endothelial lining containing viable blood cells. (Figs. 1, 2, and 3)

Discussion

The fact that the teeth had been prepared for sectioning by embedding in celloidin and that they had been cut in serial sections minimizes the possibility of distortion and made this unusual finding possible. It might be suggested that this anomalous finding is related to the fact that the tooth had been displaced and was adjacent to a pathological condition. This seems unlikely since the two teeth examined showed no other effects of their displaced position or their proximity to the ameloblastoma.

A break or tear is often seen in paraffin-embedded sections of teeth sectioned in the same plane as this tooth and is usually disregarded as an artifact due to fixation, embedding or sectioning. The finding in this case may indicate that the observations in paraffin sections are not always artifacts and may indeed represent anomalous development. Since the

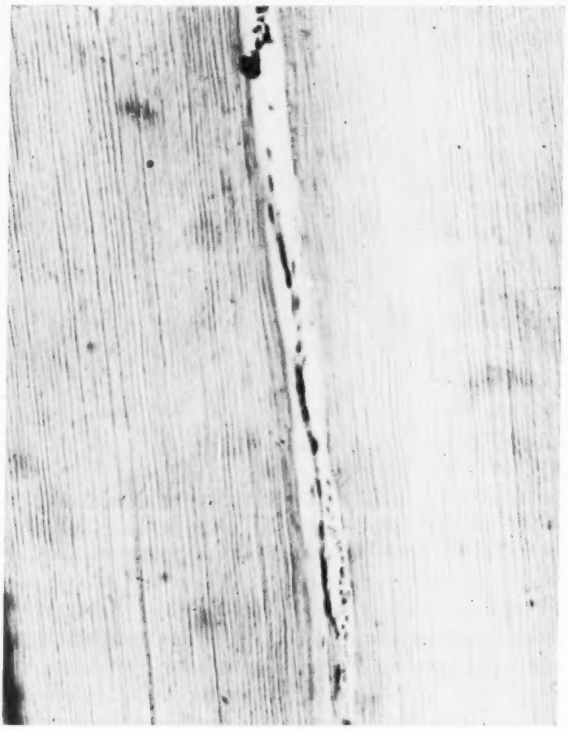

Figure 2. A higher power photomicrograph of the pulp horn extension showing a blood vessel (100 x).

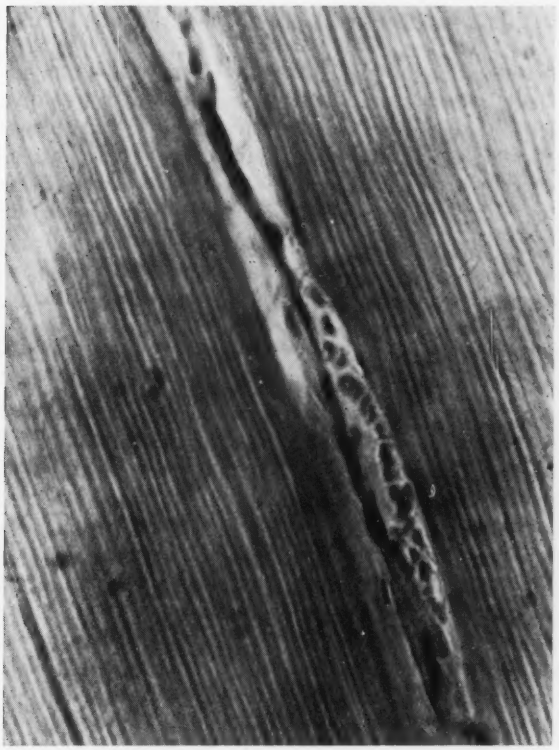

FIGURE 3. A high power photomicrograph of the blood vessel in the pulp horn extension seen in Figs. 1 and 2 showing viable blood cells and endothelial cells (490 x).

tooth demonstrated here was a young, developing tooth, we are able to see the remnants of vital tissue still present in this microscopic tract. As the development of such anomalous teeth continues this area may be deprived of its circulation and exist only as an uncalcified void which may serve as a communication between a superficially prepared cavity or carious lesion and the pulp of the tooth.

SUMMARY

An unusual anomaly in the development of a lower permanent incisor has been described and a suggestion made that this may be a possible means of communication between minor cavity preparations and the dental pulp.

Forum on Cerebral Palsy—Dental Aspects*

THE Tenth Annual Scientific Meeting of the Dental Guidance Council for Cerebral Palsy held in New York City on November 25, 1958, had as its theme "The Management of the Clinical Oral Problems for Patients with Cerebral Palsy." Dr. Raymond J. Nagle, Dean and Professor of Dental Prosthesis, New York University College of Dentistry, was the moderator.

Dr. Jerome S. Tobis, Director and Professor, Department of Physical Medicine and Rehabilitation, New York Medical College, in his paper "The Physiologic Basis for the Clinical Management of Patients with Cerebral Palsy," published herewith, noted that the philosophy of rehabilitation signifies total care. It looks upon disease as more than the specific pathology. Chronic disease, for example, has a social as well as a biological character. Therefore, the patient with chronic disease requires more than the traditional specific clinical care.

Continuing, Dr. Tobis stated that cerebral palsy must be considered a chronic disease because of the long-term disability of the patient and optimal care for him requires the contribution of many professional disciplines working as a team. However, the special skills of these various disciplines are subordinate to the programming considerations in the care of the patient. It follows, thus, that in the interests of total care of the patient, any professional discipline may be called upon to provide less than the maximum of service that is available. If, for example, a cerebral palsied child required, in addition to many therapeutic procedures, extensive dental care which would interfere completely with all other programming, it would be wise to permit only limited treatment in this dental area or to provide it over a longer period of time, so that the optimum benefits for this child could be attained.

Rehabilitation is primarily a learning or re-learning process; the objective of which is the learning of skills which utilize the potential of the structures and functions that remain. Total care, therefore, requires a thorough evaluation in the brain-injured patient of (a) his sensory perception, (b) his capacity to organize that which he perceives, and (c) his motor function in relation to this sensory organization.

Dr. Tobis said that the dentist must take into account the disturbances in the learning process that are frequently associated with the brain-injured patient. It is important that adequate time be provided for the dentist to explain to the patient and to obtain his cooperation. Another consideration relates to motor function. Cerebral palsy does not result in a disturbance of one muscle or even of a group of muscles. It is, rather, a motor disturbance of the entire musculo-skeletal apparatus. By this token, the dentist cannot, or should not, mechanically be concerned with one detail in the overall picture of the disability. He must, on the other hand, take into account the total consequence of the interaction of all the factors that may be involved. Thus, for example, he should consider occlusion, nutrition, respiration, speech and cosmetic considerations in evaluating the total dental needs of the patient. The dentist must determine what the boundaries or parameters of function are that the patient possesses. He must attempt to influence those parameters so that maxi-

* Report prepared by Edward F. Kilbane, Executive Secretary.

mum function can be obtained. The dentist, as is the physician, who would attempt to provide the patient with normal function, will find the results only lead to frustration. One cannot make the cerebral palsied patient normal; one cannot cure him of his disease process. If the dentist accepts this premise, then his objective should be to obtain for the patient the maximum function of which the patient is capable, that is, working within the parameters of function.

The second panelist, Dr. Sidney I. Silverman, Assistant Professor and Director of Graduate and Postgraduate Prosthodontics, New York University College of Dentistry, presented a paper entitled "Fixed and Removable Prosthesis for Patients with Cerebral Palsy."

In his opening remarks, Dr. Silverman stated that there were three general concepts which must be considered in prosthetics; 1) Disturbed motor activity, 2) Disturbed sensory activity and 3) Diminished learning capacity.

In a cerebral palsied patient, Dr. Silverman said, the motor incoordination makes the retention of dental appliances more difficult, and frequently exaggerates the leverages and the occlusal forces of a dental prosthesis to a degree which readily creates trauma, inadequate function, and the rejection of an appliance by the patient. The prosthesis, must in consequence of the muscular incoordination, frequently replace fewer teeth than is customary for the normal patient. The objective of treatment is to place an appliance into the scheme of muscle activity without furthering the patient's problems.

Continuing, Dr. Silverman stated that the sensory disturbances that sometimes accompany the cerebral palsy condition, frequently do not permit the patient to perceive adequately instruction during treatment or to communicate effectively with the dentist. This lack of understanding thus creates inappropriate reactions during treatment as undue retching, head movements and signs of psychological stress associated with fear, frustration and anxiety. These patients should be given simple, direct, and concrete instructions. The clinician should always be in the direct field of vision of the patient and speech should be reinforced with visual instructions. The patients should not be subjected to sudden changes in pressure or direction of hands or instruments. The textures and contours of the treatment materials should be smooth and should approximate in shape the final form of the denture.

Dr. Silverman further stated that many cerebral palsied patients have inadequate learning ability due to both altered sensory and motor capacity. Since patients must learn to use a dental prosthesis, the dentist must have insight into the patient's psychological status. The prosthesis must be constructed in an uncomplicated form for function and management. In concluding his remarks, Dr. Silverman emphasized that notwithstanding all these special considerations, the clinical techniques for the dental prosthetic needs of a cerebral palsied patient are fundamentally the same as for the normal individuals, requiring only slight modifications in instrumentation and techniques for office procedures.

THE PHYSIOLOGIC BASIS FOR THE CLINICAL MANAGEMENT OF PATIENTS WITH CEREBRAL PALSY*

JEROME S. TOBIS, M.D.**

THE American Academy for Cerebral Palsy has defined Cerebral Palsy as "any abnormal alteration of movement or motor function arising from defect, injury or disease of the nervous tissues contained in the cranial cavity." What is implied in this definition is that cerebral palsy is a neuromuscular disturbance of cerebral origin. The definition, however, does not note the complexity of the disorder. The child or adult with cerebral palsy suffers from multiple handicaps. The cerebral palsied patient, therefore, is either a child or adult, with impairment of sensory, motor, and/or psychologic function.

The field of Physical Medicine and Rehabilitation directs its activities to the care of patients with neuromuscular and musculoskeletal disorders such as cerebral palsy. The philosophy of rehabilitation signifies total care. It looks upon disease as more than the specific pathology. For example, a child with a tuberculous hip suffers not only from the destructive process caused by the tubercle bacillus and the immunologic processes of the body, but also from the impact of the social problem created in his family as a consequence of the infection. Chronic disease, then, has a social character, as well as a biological one. Therefore, the patient with chronic disease requires more than the traditional specific clinical care. Cerebral palsy must be considered a chronic disease because of the long-term disability of the patient. Optimal care for the cerebral palsied patient requires the contribution of many medical and other professional disciplines working as a team. However, the special skills of these disciplines cooperating in the team are subordinate to the programming considerations in the care of the patient. It follows that in the interests of total care of the patient, any professional discipline may be called upon to provide less than the maximum of service that is available. If, for example, a cerebral palsied child required, in addition to many therapeutic procedures, extensive dental care which would interfere completely with all other programming, it would be wise to permit only limited treatment in this dental area or to provide it over a longer period of time, so that the optimum benefits for this child could be attained.

There are three major areas of physiologic activity in rehabilitation, namely:

1. The learning process
2. Motor activity
3. Growth and development

1. THE LEARNING PROCESS

The learning process is a basic neurophysiologic activity of man which always

* Presented at the Annual Scientific Meeting of the Dental Guidance Council for Cerebral Palsy in New York City, Hotel Statler, November 25, 1958.

** Director and Professor, Department of Physical Medicine and Rehabilitation and Director of Cerebral Palsy Service, New York Medical College, Metropolitan Hospital Center.

involves the sensory and motor apparatus. Rehabilitation is primarily a learning or re-learning process. In a child it is a process of learning of new functions and some would prefer the term "habilitation" rather than "rehabilitation." Whatever the correct word, the objective is the learning of skills which utilize the potential of the structures and functions that remain. The brain determines all motor activity which is in turn, dependent upon the capacity of this brain to receive and organize sensory stimuli of the outside world. Motor function is from this approach only the end result of the response to the perception and organization of extraceptive and intraceptive stimuli. Total care, therefore, requires a thorough evaluation in the brain-damaged patient of (a) his sensory perception, (b) his capacity to organize that which he perceives, and (c) his motor function in relation to this sensory organization.

In our program at Bird S. Coler Hospital all of the cerebral palsied children routinely have ophthalmologic, hearing and psychologic evaluations. These procedures are intended to determine not only intelligence quotient per se, but also what and how the child perceives the world around him. We thereby acquire insight into the child's learning capacity and develop techniques by which to work with these children. For example, we have treated a child who had been considered as severely retarded and who under ordinary circumstances did not respond to vocal stimuli. We observed from our testing, however, that if he were placed in a darkened room he followed all commands readily. By this procedure we improved one area of his sensory perception (the auditory) by suppressing another sensory perception (the visual). Out of this observation, among others, we have developed procedure in the brain-damaged child of analyzing each sensory activity and resynthesizing them where possible in accordance with the patient's needs. Thus, at one time this may mean reducing the number of stimuli impinging on the child such as treating him in the dark in a quiet room; in the second child it may mean providing additional learning cues, such as sound or color, and in a third some supportive device, not for weight bearing, but rather for proprioception. Thus, we have reviewed one of the major areas in the physiologic activity in rehabilitation, namely, the learning process.

A second aspect of cerebral palsy that I would like to review with you has to do with growth and development. Too often we look on the disease of a disabled child as a static phenomenon. The chronic disease and the disability are processes of which we can only record the observations of that moment, day or year. The same contracture in a child of four may create one disability and in the young adult of fourteen or sixteen, quite another. The syndrome which we designate as cerebral palsy may change significantly with years. It is commonly known that some athetoid tremors improve with the years, others worsen. Thus, the rate and direction of growth and development influence the character of disease and disability. We must always be aware that it is a dynamic process rather than a fixed state, whatever the illusory, stationary character of the disability may be. If the child has pneumonia, whether the child cooperates or not, the successive treatment is likely to be determined by the effectiveness of the antibiotic prescribed by the physician against the bacterial invader, by the

nursing care provided. In rehabilitation the patient must actively participate in order to gain new function. It seems to me that by the same token, the effective long-range dental care of patients with cerebral palsy requires the active participation of the patient in effective management. By the same token, it is important that the patient be made to understand within his capacity to do so the objectives, the goals that are sought and the techniques in general that are to be employed in reaching those goals. The second correlary of these physiologic principles is that care in physical medicine and rehabilitation is symptomatic treatment. This is true about the care in most chronic diseases, since we are incapable of influencing the underlying disease process. Although the pathophysiology of the disease is essential to understand prognosis and contraindications for treatment, therapy is not directed to the disease itself, but rather to the symptomatology. Treatment is conducted to gain skills in cerebral palsy, no matter where the locus of brain pathology or what the etiologic agent, be it Rh factor, viral encephalitis, or cerebral vascular accident.

These principles have significant implications for the dentist in the role he assumes in the management of cerebral palsied patients. Thus, for example, the dentist must take into account the disturbances in the learning process that are frequently associated with the brain-damaged patient. It is important that adequate time be provided for the dentist to explain to the patient and obtain his cooperation in the necessary dental care. Another consideration relates to motor function. Cerebral palsy does not result in a disturbance of one muscle or even of a group of muscles. It is, rather, a motor disturbance of the entire musculoskeletal apparatus. By this token, the dentist cannot, or should not, mechanically be concerned with one detail in the overall picture of the disability. He must, on the other hand, take into account the total consequence of the interaction of all the factors that may be involved. Thus, for example, he should consider occlusion, nutrition, respiration, speech and cosmetic considerations in evaluating the total dental needs of the patient. The dentist must determine the boundaries or perimeters of function which the patient possesses. He must attempt to influence those perimeters so that maximum function can be obtained. The dentist, or the physician, who would attempt to provide the patient with normal function, will find the results only lead to frustration. One cannot make the cerebral palsied patient normal; one cannot cure him of his disease process. If the dentist accepts this premise, then his objective should be to obtain for the patient the maximum function of which the patient is capable, that is, working within the perimeters of function. Another aspect of care relates to the basic problem in the motor dysfunction of the cerebral palsied. This is the muscle imbalance. The goal of therapy, by both the physician and the dentist, is to correct this imbalance. The objective of treatment in cerebral palsy is to influence in a salutary way motor function so that the patient may perform the motor skills necessary to carry on a socially useful life. The dentist should seek to correct this motor imbalance so that maxillofacial function may be improved.

Another aspect of care relates to the location of the treatment. The principles of care for home, hospital, or office are

essentially the same, but the emphasis will vary depending upon the facilities that are available. I have been fortunate in having experience with patients in an in-patient facility such as at Bird S. Coler Hospital, and also in an out-patient facility in an educational setting at the Brentwood Southeast School where there are classes for handicapped children. The dental facilities at Bird S. Coler Hospital are well equipped and the dentists are well oriented to handle the cerebral palsied child. On the other hand, at Brentwood School, which is in Suffolk County, it is extremely difficult to get a qualified general practitioner of dentistry to provide effective care to the cerebral palsied child. These children require long-range planning and whatever treatment is provided for them should be in the context of a whole plan of therapy. It is my impression, on the other hand, that whereas the dental care provided for the children in the hospital setting meets this essential, or prerequisite of care, the care provided for the children in the school is generally of an emergency nature and does not seem to conform to a long-range plan.

In conclusion, I would like to emphasize that in the effective medical and dental management of the patient with cerebral palsy it is important that one apply the basic principles of physiology to an understanding of this complex entity. With such a background, one can develop a regimen of therapy that has a sound and rational basis.

PARTIAL AND COMPLETE DENTURE PROSTHESIS FOR PATIENTS WITH CEREBRAL PALSY*

SIDNEY I. SILVERMAN, D.D.S.**

The techniques of dental care for patients with cerebral palsy who require prosthesis must be consistent with the general physiologic principles for the clinical management of these patients. There are several general concepts which must be considered in providing prosthetic care. They are:

1. Disturbed Motor Activity

Cerebral palsied patients have some degree of motor disability which affects one or more of the following functions associated with the dental and oral structures; mastication, deglutition, respiration, speech, posture and gait. The relationship between these functions and their associated oral structures represent a constellation of forces into which the dentist must introduce a prosthetic appliance. In the cerebral palsied patient, the motor incordination makes the retention of dental appliances more difficult, and worse still, frequently exaggerates the leverages and the occusal forces of a dental prosthesis to a degree which

* Presented at the Annual Scientific Meeting of the Dental Guidance Council for Cerebral Palsy in New York City, Hotel Statler, November 25, 1958.

** Assistant Professor and Director of Graduate and Postgraduate Prosthodontics, New York University College of Dentistry; Associate Clinical Professor, Physical Medicine and Rehabilitation, New York Medical College, Metropolitan Hospital Center.

readily creates trauma, inadequate function, the premature loss of teeth and rejection of an appliance by the patient. The prosthesis, thus, must in consequence of the spastic, adventitious and otherwise incoordinated muscle function, frequently replace fewer teeth than is customary for the normal patient and replace teeth in a less favorable esthetic position in the arch to reduce the resultant occlusal forces. The objective of treatment is not to eliminate or modify the muscle incoordination but rather to place an appliance into the scheme of the muscle activity without further exacerbating the patient's problems.

2. Disturbed Sensory Activity

Cerebral palsied patients frequently have some sensory deficits such as, for example, in the special senses of vision and hearing, and in the general senses of touch, proprioception and pain. These deficits frequently do not permit the patient to perceive adequately instruction during treatment or to communicate effectively with the dentist. This lack of understanding thus creates inappropriate reactions during treatment such as undue retching, head movements and signs of psychological stress associated with fear, frustration and anxiety. These patients should be given simple, direct, and concrete instructions. The clinician should always be in the direct field of vision of the patient and speech should be reinforced with visual instructions. The patients should not be subjected to sudden changes in pressure or direction of hands or instruments. The textures and contours of the treatment materials should be smooth and should approximate in shape the final form of the denture. The patient must be conditioned carefully, without haste, to the doctor's touch, speech and personality, so that the patient may integrate the stimuli to the best of his limited ability.

3. Diminished Learning Capacity

Many cerebral palsied patients have inadequate learning ability due to both altered sensory and motor capacity. Since patients must learn to use dental prosthesis, it is incumbent upon the dentist to have insight into his patient's psychologic status. The dentist must have information on the patient's ability to understand instructions and his ability to communicate by verbal expression, by gesture or by emotional and physiologic reaction. These patients at birth have the same reflexes for swallowing and respiration that normal people have. These reflexes may be deviant but they are adequate for life and they cannot be substantially helped by prosthesis. On the other hand, mastication and speech are learned reflexes and functions and the patient's cooperation is required in the development of these skills to a high level of efficiency. Thus, a dental prosthesis must be constructed in an uncomplicated form for function and for management in insertion and removal from the mouth. It must be so constructed that it does not tax their ability to learn to use it.

4. Compromises

Compromise is a major concept in treating cerebral palsied patients. The need to compromise is evident (1) in the level of function and efficiency which is acceptable to both dentist and patient; (2) in the esthetics which frequently is less than what is provided for a normal person; (3) in design of an appliance which must frequently be devised for easy manipulation for insertion and re-

moval from the mouth even at the expense of better esthetics, function or stability, and (4) in the duration of service which frequently should be for only a short interval of time with plans for several subsequent replacements.

5. Conclusion

Notwithstanding all the special considerations and the number of compromises, the clinical techniques for the dental prosthetic needs of a cerebral palsied patient are fundamentally the same as for the normal individual requiring only slight modifications in instrumentation technique and office procedures.

These concepts were demonstrated in a young adult patient with cerebral palsy who required complete dentures. The principles covered, in addition to the biologic considerations and technical procedures, include the importance of psychological insight into the patient's behavior and into his social and economic conditions.

NOTICE

In accordance with Constitution and By-laws requirement, we publish herewith, personnel of the Auditing and Nominating committees for 1959.

AUDITING COMMITTEE

Wm. E. Brown, Chairman; James Simmons, Paul Weber. C. F. Tuma, ex-officio.

NOMINATING COMMITTEE

Henry Wilbur, Chairman; Albert Anderson, Lawrence Burdge.

PRELIMINARY PROGRAM AND PRE-REGISTRATION FORM, 1959 ANNUAL MEETING, AMERICAN SOCIETY OF DENTISTRY FOR CHILDREN

NEW YORK CITY
FRIDAY, SATURDAY AND SUNDAY—SEPTEMBER 11, 12, 13, 1959

REGISTER EARLY

SOCIAL PROGRAM

FRIDAY, September 11, 1959—
4:00 P.M. Registration and Knickerbocker Welcome Party, at which you will be guests of the New York State Society of Dentistry for Children
Evening free for theatre, N. Y. C. tours, etc.

SATURDAY, September 12, 1959—
10:30 A.M. Coffee Break
11:00 A.M. For the Ladies:
Brunch and Fashion Show at the Waldorf-Astoria Hotel, Jade and Basildon Rooms (door prizes, including a portrait in oil of the winning guest)
1:00 P.M. Scientific Luncheon, Hotel Commodore
6:30 P.M. Cocktail Party and President's Banquet, Grand Ballroom, Hotel Commodore

SUNDAY, September 13, 1959—
10:30 A.M. Coffee Break
2:00 P.M. For the Ladies:
Guided Tour of the United Nations Building
4:30 P.M. "ALOHA" Farewell Party

THE SCIENTIFIC PROGRAMS

SATURDAY, September 12, 1959—
9:00 A.M.-10:30 A.M. Registered Clinics
11:00 A.M.-12:00 Noon Problem Clinics
12:30 P.M.- 1:30 P.M. Scientific Luncheon

THE SCIENTIFIC LUNCHEON

The plan for the Scientific Luncheon (which is another innovation for A.S.D.C. Meetings) is as follows: At each table (seating ten) a scientific subject, announced beforehand, will be discussed during and after lunch. At each table there will be one of the clinicians of our Registered or Problem Clinics to lead the discussion and a member of the Scientific Program Committee to guide it.

Members who attend the Luncheon will choose the table they wish and will remain there throughout the Luncheon and discussion.

Scientific exhibits, visual education, projected clinics and lectures are also being arranged for Friday afternoon, Saturday and Sunday.

SUNDAY, September 13, 1959—
9:00 A.M.-10:30 A.M. Registered Clinics (Repeated)
11:00 A.M.-12:30 P.M. Demonstration and Table Clinics (No special registration required)
2:00 P.M.- 4:00 P.M. Panel Discussion

BUSINESS MEETINGS

Friday, 3 P.M. Executive Council Meeting
All A.S.D.C. members are invited
Saturday, 2 P.M. State Delegates Meeting
3 P.M. General Membership Meeting

REGISTERED CLINICS

1. FIXED AND REMOVABLE PROSTHESIS FOR CHILDREN
   DR. ALBERT L. ANDERSON, San Diego, California
   Past President, American Society of Dentistry for Children, and
   DR. JACK LONGLEY
   Pedodontist.

2. CLINICAL ORAL PATHOLOGY
   DR. CHARLES L. BOYER
   Instructor of Pediatric Dentistry, Harvard University, School of Dentistry; Member of Staff of Children's Medical Center, Boston.

3. ORTHODONTICS AND DENTISTRY FOR CHILDREN
   DR. WILLIAM BROWN
   Associate Professor of Pedodontics, University of Michigan, School of Dentistry; Member—American Board of Pedodontics.

4. PRESERVATION OF INFECTED PRIMARY MOLARS
   DR. M. MICHAEL COHEN
   Stomatologist, Boston Floating Hospital; Faculty, Tufts University School of Medicine; Author of Pediatric Dentistry.

5. INJURIES TO THE TEETH OF CHILDREN
   DR. ROY ELLIS
   Dean of Faculty, Professor of Operative Dentistry, School of Dentistry, University of Toronto; Author of Injuries to the Teeth of Children.

6. TRAINING THE CHILD PATIENT
   DR. SIDNEY B. FINN
   Professor of Dentistry, University of Alabama; Author of Clinical Pedodontics.

7. PULPAL MANAGEMENT IN THE PRIMARY AND YOUNG PERMANENT DENTITION
   DR. JOSEPH T. HARTSOOK
   Associate Professor of Dentistry, University of Michigan, School of Dentistry, Ann Arbor, Michigan.

8. HABITS
   DR. SAMUEL HEMLEY
   Professor of Orthodontics, New York University, College of Dentistry; Author of Orthodontic Theory and Practice.

9. AMALGAM RESTORATIONS
   DR. RALPH IRELAND, Lincoln, Nebraska
   Dean and Professor of Pedodontics, University of Nebraska, College of Dentistry; Secretary—American Board of Pedodontics.

10. DIAGNOSIS AND TREATMENT PLANNING IN PEDODONTICS
    DR. PAUL LOSCH
    Associate Professor of Pediatric Dentistry, Harvard University School of Dentistry; Chief of Dental Department of Children's Medical Center, Boston.

11. PRACTICE MANAGEMENT IN PEDODONTICS
Dr. Melvin Noonan
Pedodontist, Birmingham, Michigan.

12. CONTROL OF PAIN IN PEDODONTIC PRACTICE
Dr. Norman Olsen
Associate Professor and Chairman of Department of Pedodontics, Northwestern University, School of Dentistry.

13. HEALTH EDUCATION
Mr. Perry Sandell, Chicago, Illinois
Director of Bureau of Dental Health Education, American Dental Association.

14. HOSPITALIZATION FOR THE ROUTINE CARE OF EXCEPTIONAL CHILDREN
Dr. George Teuscher
Dean and Professor of Pedodontics, Northwestern University, School of Dentistry; Member—American Board of Pedodontics.

15. CARIES CONTROL
Dr. Joseph F. Volker
Dean of School of Dentistry, University of Alabama.

16. PRACTICE MANAGEMENT IN PEDODONTICS
Dr. Roy Wolff
Pedodontist, St. Louis, Missouri.

17. HOW TO PRESENT DENTAL HEALTH TO CHILDREN OF ALL AGES
Jacob Zack, B.A., M.A.
Principal, Boys High School, Brooklyn, N. Y.; Author of Public Speaking in Dental Health Education . . . *Basic Course.*

PROBLEM CLINICS AND SPECIAL PROGRAMS

1. ANKYLOSED TEETH
Dr. Elias Fass, Fairfield, Connecticut
Instructor of Pedodontics, New York University, College of Dentistry; Diplomate of American Board of Pedodontics.

2. INTERCEPTIVE ORTHODONTICS
Dr. Sidney Kohn, Jersey City, New Jersey
Professor of Pedodontics, Fairleigh Dickinson University Dental School; President of American Board of Pedodontics.

3. INTERNAL RESORPTION OF PULPOTOMIZED TEETH
Dr. Ralph McDonald
Professor of Pedodontics, Indiana University, School of Dentistry; Member of American Board of Pedodontics.

4. ROOT CANAL THERAPY FOR PRIMARY TEETH
Dr. Bernard Z. Rabinowitch, Beverly Hills, California
Diplomate of American Board of Pedodontics.

5. PUBLIC HEALTH DENTISTRY—THREAT OR PROMISE TO THE PEDODONTIST
Dr. Harry Draker
Assistant Director, Department of Dentistry, New York State Department of Health.

6. ORTHODONTIC REHABILITATION AND INTERCEPTION
   DR. LOUIS A. SIMON
   Assistant Director, Bureau of Dentistry, New York City.
   DR. SARA GRAY
   Dental Consultant, Bureau of Dentistry, New York City.

7. SPACE MAINTAINER FOR THE MISSING PRIMARY MOLAR
   By the STUDENT PEDODONTIC SOCIETY OF NEW YORK UNIVERSITY.

TABLE CLINICS AND DEMONSTRATIONS

(A Partial Listing)

1. JOHN A. BOGERT, D.D.S., Kansas City, Missouri
   "Oral Malignancies of Children."
2. A. E. IVERSON, D.D.S., Kansas City, Missouri
   "The Management of Injuries to the Young, Permanent and Primary Anterior Dentition."
3. BENEDICT B. KIMMELMAN, D.D.S., Philadelphia, Pennsylvania
   "Toothbrushing, Its Techniques and Values."
4. J. P. MCGUIGAN, D.D.S., Halifax, Nova Scotia
   "A Simple Intermediary Method of Protecting and Restoring to Function Fractured Anterior Teeth."
5. W. NEAL NEWTON, D.D.S. and JOHN E. GILSTER, D.D.S., St. Louis, Missouri
   "Full Denture Service for the Patient with Anhydrotic Ectodermal Dysplasia."
6. JULIAN B. RAFFKIND, D.D.S. and KENNETH L. CATHEY, D.D.S., San Antonio, Texas
   "Custom Matrix Band Technique."
7. MARVIN SNIDERMAN, D.D.S., Pittsburgh, Pennsylvania
   "Prescription Writing."
8. PAUL STARKEY, D.D.S., Dayton, Ohio
   "The Use of the Rubber Dam in Pedodontics."
9. JEROME D. TEITELBAUM, D.D.S., Valley Stream, New York
   "At What Age Should a Patient be Referred to an Orthodontist?"
10. WALTER S. WEISZ, D.D.S., Pittsburgh, Pennsylvania
    "The Reduction of Dental Decay by the Use of a Sodium Fluoride Mouthwash."
11. HUGH M. KOPEL, D.D.S. and ZALMAN KONIKOW, D.D.S., Detroit, Michigan
    "The Treatment of Drug Reactions in Pedodontics."
12. JOSEPH C. MUHLER, D.D.S., Bloomington, Indiana
    "The Clinical Use of Stannous Fluoride."
13. WILLIAM P. HUMPHREY, D.D.S., F.A.C.D., Denver, Colorado
    "Use of Chrome Steel in Dentistry for Children."
14. FRANK H. DANIEL, D.D.S., North Carolina
    "Preventive Orthodontics for the Child Patient."
15. STANLEY J. BEHRMAN, D.D.S., New York, New York
    "Clinical Oral Pathology in the New Born."
16. MORRIS KELNER, D.D.S., New York, New York
    "The Physiology and Rationale of Treatment of the Traumatized Maxillary Permanent Anterior Tooth."
17. KENNETH M. PLATZER, Brooklyn, New York
    "Orthodontic Aids in Dentistry for Children."
18. WILLIAM H. SUNLEN, D.D.S., Alachua County, Florida
    "Case Presentation in Children's Dentistry."

SYMPOSIUM ON PULP THERAPY

SUNDAY, SEPTEMBER 13—2:00 P.M.

Moderator

DR. MAURY MASSLER

Professor and Head of the Postgraduate Department of Pedodontics, University of Illinois, College of Dentistry.

LECTURER:

DR. BERNARD Z. RABINOWITCH

Diplomate—American Board of Pedodontics, Beverly Hills, California.

SUBJECT:

"Pulp Capping for Primary and Immature Permanent Teeth."

LECTURER:

DR. MICHAEL BUONOCORE

Research Coordinator Eastman Dental Dispensary, Rochester, New York.

SUBJECT:

"Vital Pulpotomy for Primary and Immature Permanent Teeth."

LECTURER:

DR. CHARLES A. SWEET, JR.

Former Associate Professor and Head of the Department of Pedodontics, University of Southern California.

SUBJECT:

"Therapeutic Pulpotomy for Primary Teeth."

LECTURER:

DR. ISRAEL BENDER

Chief of Department of Dentistry, Albert Einstein Medical Center, Northern Division, Philadelphia, Pennsylvania.

SUBJECT:

"Pulpectomy for Primary and Immature Permanent Teeth."

PRE-REGISTRATION BLANK

Name .....
(Please print)

Address ..... City ..... State .....

Scientific Program

Kindly reserve space for me on Saturday, September 12 and Sunday, September 13, 1959, for the following:

Procedure

Please indicate your preference by marking in the spaces provided on the Application Blank, the number of the Clinic you wish to attend. Indicate second choice as well.

Every effort will be made to give you your first choice, but if that clinic is filled, you will be enrolled according to your second choice.

Saturday's registered clinics will be repeated on Sunday.

		1st choice	*2nd choice*
Registered Clinics	Saturday	.....	.....
	Sunday	.....	.....

	No. of clinics	*Amount*
1 clinic ($3.00)	.....	.....
2 clinics ($5.00)	.....	.....

Social Program

I also wish tickets for the following events:

		No. of tickets	*Amount*
Knickerbocker Welcome Party at which you will be guests of the New York State Society of Dentistry for Children		.....	*(Guest)* .....
Ladies Brunch, Fashion Show and U.N. Tour	($ 8.00) each	.....	.....
Scientific Luncheon	($ 5.50) each	.....	.....
Cocktail Party and President's Banquet	($15.00) each	.....	.....
Farewell "Aloha" Party	($ 2.50) each	.....	.....
I enclose my check for:	Total		.....

I have hotel reservations .....

Signature.....

Make your check payable to the
American Society of Dentistry for Children
Telephone Reservations Cannot Be Accepted
Mail to: Dr. M. Joel Freedman
300 West 23rd Street, New York 11, N. Y.

Editor's Note:

Abe Kobren advised us on May 29, that more than 600 reservations had been made. Better take a tip and register NOW.

A.E.S.

How Much Irradiation Do You and Your Patients Receive?

RICHARD C. HASKINS, D.D.S., M.S.D.*

IN recent newspaper and magazine articles, as well as in dental literature, much has been written regarding the concern dentists should place on the ever-increasing use of ionizing radiation. Perhaps this radiation scare is beneficial because it may stimulate the dental profession to learn more about its equipment and procedures. The total overall effect of x-ray on humans is unknown because individuals with whom to experiment have not been and probably will not be available.[1, 2]

Perhaps dentists are innocent promoters of a problem that has all too often been treated as an inconsequential entity. For example, a common attitude in some dental circles is that dentists should be aware of and perhaps careful with the dental x-ray apparatus and that they should keep away from the central beam emitted from the head of the machines but that dental x-ray machines, being small, would do no harm. Too often the attitude has been similar to that of Meistroff, who wrote, "The truth is that the output of a dental x-ray machine is so insignificant and infinitesimal that the total exposure for a full mouth series is not worthy of consideration."[3]

It is true that various amounts of dosage to body tissues are rather small and perhaps limited; however, there are things to consider other than these entities alone. A future with an increase in the use of radiation as a diagnostic tool in dentistry, as a form of treatment of various lesions and diseases, and as a source of energy is evident.

Because of greater contact with radiation, dentists should police themselves in its use if they are to continue the privilege of making diagnostic x-ray films without restraints. Some may consider this restraint unlikely. However, it should be remembered that at one time the use of narcotics was not controlled and their usage went rampant. Today the use of narcotics in this country is one of the more rigidly controlled avenues in the field of any healing art. There is no reason why similar restraints could not be placed on the use of irradiating units.[2]

Radiological procedures vary in the amount of irradiation required. Also, similar machines may produce varying amounts of irradiation for the same procedure. This variance is due to differences in equipment, technique, and type of film required.

Some standardization, such as is done in most radiologic laboratories and clinics, should then be considered. In the x-ray laboratory, tests are frequently being run to determine exactly how much irradiation is produced by a machine for a given procedure. One might find, for instance, that for a lateral head plate, an average irradiation of .05r might be given the patient and that for every minute of cinefluorographic film made the patient would receive an average of

(This work was aided by a grant from the U. S. Public Health Service.)

* Department of Pediatrics, University of Utah College of Medicine, 1940 South Second East, Salt Lake City 15, Utah.

5r. These are averages based upon many surveys of the same procedure, technique, and the same x-ray machine.

Conversation with dentists and review of the dental literature indicate that many dentists do not know how much irradiation patients receive each time a film is exposed with their x-ray machine. The reason for this is apparently that dentists have been led to believe that they should not be too concerned about over-exposure from dental x-ray machines.[3] In the literature a wide variance in the exposure for dental x-ray procedures is reported. One report comments that "certain facial skin areas could receive up to 77r for a 14 film full mouth survey."[4] Sweet and Sweet[5] refer to a newspaper article which mentions the use of 300r for a full mouth survey. They also point out that a very adequate survey can be produced with the use of only 5r. Berry[6] points out that dental units vary in output from .6r to 4.8r per second. Because of this wide variance it is evident that an obligation exists not only to dental patients and to dentists themselves, but to society as well. This obligation requires that dental machines be calibrated and that the amount of irradiation per exposure be determined; and, if the exposure can be minimized, it should be done. Perhaps some dentists have failed to realize that if their machines are not working properly and adequate precautions are not taken, they, as operators, can receive too much irradiation. This suggestion of calibrating dental x-ray machines and technique may sound rather rigid or non-essential. No modern dentist, however, would consider giving a patient a local anesthetic without knowing its contents or its strength; he would not consider giving a patient a quantity of penicillin without knowing how many units there were in the syringe; he would not place silver amalgam in the teeth of his patients without knowing that the amalgam is approved by the National Bureau of Standards, and what is in the amalgam. By the same token he should not give his patients irradiation without knowing what he is giving them in roentgen dosage.

The next point which might be considered is how a dentist can calculate patient irradiation from the known KVP, the milliamperes, length of exposure and target-skin distance. It is difficult to do because of variation among x-ray machines. Even the age of the tube makes a difference. It can be done, however, by obtaining the services of a testing laboratory to survey dental offices for any radiation which might come from the x-ray machine in that office or from the machine in the office next door. One means of making this determination is by the use of a film badge service which the laboratory supplies to the person desiring to survey his office. The badge is fixed in position and exposed for a certain length of time, and the amount of irradiation the badge receives will indicate the amount of irradiation in the area where the badge is located. With this type of survey, one can monitor his office, himself, and his auxiliary personnel; and he can learn how much irradiation his patients receive. In such a survey one should also consider stray radiation which might be received during the operation of x-ray equipment.

The amount of irradiation the patients receive from each dental film may be determined by exposing a film badge in front of the cone the same distance away from the head of the x-ray machine as the film would be if it were in

the mouth. Then the film badge must be processed and assayed under rigid conditions by a person trained in such testing procedures.

The amount of stray irradiation the operator is receiving and how much irradiation is present in a room may be determined by having the operator wear a film badge for one week, and by placing film badges at various points in the room for a 1-week period to determine how much irradiation is received by these badges.

With the knowledge of how much irradiation the patient and the office personnel receive, calibration of the machines should be changed to a safer and better exposure pattern. On the advice of the National Committee on Radiation Protection,* which is an advisory committee to the National Bureau of Standards, a rather rigid but safe outline of maximum irradiation exposure (termed Maximum Permissible Dose) has been established. This should be acceptable to all as the dosage is well within the latitude of practicality. The committee has grouped people into three categories: (1) Those ranging in age from birth to 18 years of age, (2) those from 18 years of age to 45 years of age, and (3) those people older than 45 years of age. The recommendation is made that those people in group one may receive a total body dose of no more than 1.5r per year, those in the second category may receive a total body weekly dose of .3r, while those people in the third group may receive double the dose of those in the 18-45 year bracket.*[7] Although these doses are estimated, "In the light of present knowledge, they are not expected to cause detectable bodily injury to a person at any time during his lifetime."[7] These figures are for a total body dose and not for limited areas.

Why then should there be concern about dental x-rays? Because the exposure given to dental patients adds to the total overall roentgen exposure. Beyond that it is necessary to consider the reasons why excessive irradiation is harmful. In sufficient quantities, irradiation may cause pathological changes or even cell destruction. Some cells, being more sensitive to irradiation than others, are affected differently than those which have less sensitivity.

Nolan[8] has pointed out that significant hematologic changes have been demonstrated in patients following a full mouth dental survey when 65r or more were administered (and apparently this is not an unusual dose in some dental offices). How, then, can dentists safely make dental films of patients without knowing how much irradiation they are receiving? Especially when evidence is available indicating that many times patients receive doses greater than that required to cause physiological changes.

Keeping these points in mind, consider where the central beam is pointed. If mandibular films are being made, the central ray may well point directly at the pituitary gland; if maxiliary anterior films are being made the central ray may be directed at the gonads. If either of these areas is over-radiated, physiological

* This group consists of representatives from the American College of Radiology, American Medical Association, American Dental Association, American Roentgen Ray Society, National Bureau of Standards, National Electrical Manufacturers Association, Radiological Society of North America, U. S. Air Force, U. S. Army, U. S. Atomic Energy Commission, U. S. Navy, U. S. Public Health Service, and three Representatives-at-Large.

* These figures are currently being reduced.

harm could result, especially when the patients are children.

Because of these various points that have been brought out, this writer felt it was necessary to monitor his own office. The first survey was made more than a year ago. A second survey was made after a new tube had been installed in the x-ray machine. The results obtained therefrom were both surprising and gratifying.

During the monitoring it was found that leakage radiation, scattered radiation, secondary radiation or stray radiation were minimal (.003r per week). This figure was determined by placing film badges at various points in the room for one week. During that time, film badges were worn by the assistant and the dentist, and there was found to be only a small amount of radiation reported in these badges (.003r per week). From these two observations, the author determined that he was working in a safe office as far as x-ray apparatus was concerned. Most radiologists would consider .05r per week or less to be safe. Apparently, because .05r per week are considered safe, some laboratories when reporting film badge data report only exposure data in excess of .05r. This was the case with the laboratory that did the testing on the first survey. Because the film badges tested in the first office survey received .05r or less, the exact exposure was not recorded, and for this reason the above report is a result of the second office survey only.

To determine how much irradiation a film would receive per exposure, a film was exposed approximately the same distance from the target in the x-ray machine head as it would be if a dental film were being exposed in the mouth. First a short cone was used with settings of 65 KVP, 10 MA and 100 volts, and the target film distance originally used with that machine. In order to make a 12 film survey of the oral cavity using fast film the patients would receive close to 6r. If regular film were used it would be much more. For a full mouth series 6r is not excessive but should be reduced where possible.[2, 5]

By increasing the KVP to 70 (the upper limit of the KV range on the machine used), using a long cone and fast film, it was found that a 12 film survey could be made, giving the patient only 1.4r. Going a step further, when the new tube was placed in the x-ray machine, it was found that r per exposure was still less and that a similar survey could be made for .850 to .900r. This was well within safety limits. These results point out that no two machines will produce the same amount of irradiation. It should not be taken for granted that because a particular brand and model of x-ray machine is used that it will produce a particular amount of irradiation with known target-skin distance and KV and MA settings.

One must consider whether dental x-ray with associated irradiation does more harm than good. This consideration is especially critical to those who treat children, for youngsters would be affected most by irradiation. Is there a justification for the taking of pedodontic x-ray films? The answer is in the affirmative. Dentists are justified in using x-ray if their machines are properly surveyed because dental x-ray films are essential to adequate diagnosis. With this point in mind it must be realized that it is essential to have dental radiograms. However, the profession should do its utmost to reduce the irradiation exposure to its patients as well as to its members when

dental x-ray machines are being used. This can be done first by employing a monitoring service in dental offices and, second, by taking necessary procedures to reduce any excessive exposure from dental x-ray machines.

The following are considered to be good means of reducing x-ray exposure to dental patients as well as to office personnel: increase target film distance (by using a long cone), decrease exposure time (by using fast film), either use a lead screen or have a long time-switch cord to increase the distance between the operator and the x-ray machine head, insert aluminum filters in the opening from the x-ray tube head to the outside (usually 2 mm. of aluminum is considered adequate), use a higher KVP, and lastly, do accurate radiology, wherein the number of retakes is kept at a minimum.

REFERENCES

1. PRUZANSKY, SAMUEL, Dental Review—Congenital Malformations. J.A.D.A., 46:633-642, 1957.
2. ROBINOW, M., and SILVERMAN, F. N.: Radiation Hazards in the Field of Pediatrics. Pediatrics, 20 (Suppl. 5):921-937, 1957.
3. MEISTROFF, C. L.: Dental X-Rays Are Safe. Oral Hygiene, 48:36-38, 1958.
4. Roentgen Ray Radiation. Dental Topics, 6, No. 5 (Pfizer Laboratories, Brooklyn 6, New York).
5. SWEET, C. A., and SWEET, J. G.: The Health of the Child Is Dependent on Dental X-Rays. J. Dent. for Children, 24:52-53 (1st Quarter), 1957.
6. BERRY, H. M.: Cinefluorography with Image Intensification for Observing Temporomandibular Joint Movements, J.A.D.A., 53:517-527, 1956.
7. X-Ray Protection, U. S. Department of Commerce, National Bureau of Standards, Handbook 60, December 1, 1955.
8. NOLAN, W. E., Radiation Hazards to Patients from Oral Radiography. J.A.D.A., 47:681-684, 1953.

The Dental Care of Handicapped Children In the Hospital

RICHARD NAISMITH, B.S., D.D.S., M.P.H.

THE dental care of the handicapped child need not lay a heavy burden on the hospital's budget. An adequate service can be provided at minimum cost, largely by the efficient use of existing equipment, provided the administrator is reasonably familiar with the problem involved.

These problems fall into two classes: 1. The needs of the child himself, and 2. The requirements of the dentist as he tries to meet the child's needs. For the convenience of the hospital administrator, the dental problems that face the handicapped child will be summarized in some detail before the dentist's needs are considered.

An abnormally large proportion of handicapped children suffer from diseases and abnormalities of the mouth and teeth. Not all of these diseases are the direct result of the handicap, but all have an adverse effect on the child's general health, his speech, appearance, and social acceptability. Although many handicapped children are in institutions, it cannot be assumed that they receive adequate dental care and supervision. It is even less certain that home care is optimal in any given case in this respect. Even parents, who are not always cognizant of oral diseases or the need for good dental hygiene, tend to give less than routine care to these patients. Errors may be committed by the best intentioned parent considering the difficulty of communicating with the blind, the deaf-mute, the mentally retarded child, and the child who lacks muscular control. All of this is superimposed on the personal problems of the family. In children with nervous and muscular diseases, the problem of dental hygiene is aggravated by their inability to maintain a regular diet. A soft diet has a tendency to provide inadequately balanced nutrition. The patient is more vulnerable to dental caries when diets are high in sugar and carbohydrates. In certain types of cerebral palsy, patients' muscle development is greatly impaired by lack of function.

Administrators are acquainted with the various chief types of disability affecting the handicapped child. Briefly, these are:

Cerebral Palsy, which is the result of damage to the motor centers before or during infancy. The five principal types are spasticity, ataxia, athetosis, rigidity, and tremors. Muscle incoordination, weakness, mental retardation, disabilities affecting the ears and eyes as well as behavior disorders are common characteristics of the above conditions. There are 550,000 individuals in the United States affected by cerebral palsy.

Muscular Dystrophy is a heredofamilial, degenerative disease of unknown origin, manifested by weakness and progressive wasting away of the voluntary musculature. Two-thirds of the patients are between 3 and 13 years of age.

Multiple Sclerosis is a crippling disease of the nervous system, of unknown origin, affecting some 250,000 individuals. These patients are between 20 and 40 years of age, with a few being children. The disease is characterized by

unpredictable exacerbations and remissions. Only a small area, or many areas may be involved. Weakness and spasticity cause difficulties in chewing, swallowing, as well as speech. Frequently the patient cannot take care of his own dental hygiene because of manual weakness.

Mental Retardation may be due to congenital anomalies of the brain, anoxia, infectious diseases, encephalitis, injuries to the brain, brain hemorrhage, or erythroblastosis fetalis. The mentally defective child does not show motor defects.

Congenital Anomalies of the Mouth. One out of every 700 or 800 infants is born with a cleft lip or cleft palate. Parents make a better psychological adjustment to the child if the cleft lip is treated surgically as soon after birth as possible. The operation for cleft palate is usually done anywhere from 18 months to 4 years depending on the circumstances and the philosophy of the surgeon. The anomaly affects both speech and feeding, and treatment is dependent upon a coordinate program enveloping the services of an orthodontist, a prosthodontist, a pedodontist, a surgeon, a speech therapist, a psychologist, and a pediatrician.

Handicaps do not produce unique dental diseases, although the dental diseases that arise in the handicapped child are often more severe than usual, and are difficult to treat because of special circumstances brought about by the disease or abnormality.

Insufficient chewing may cause the teeth to erupt late; as a result the parent tends to offer a soft diet, requiring less masticatory effort on the part of the child.

Insufficient brushing allows the gums to become hyperplastic and inflamed.

Lack of vitamins and minerals in the diet makes for poor calcification of bones and tissue tone.

Bruxism (grinding the teeth) occurs periodically in children. Bruxism produces flat occlusal tables, and secondary dentin is formed to prevent exposure of the pulp.

The use of drugs, e.g., diphenylhydantoin (Dilantin®) to control convulsive seizures, tends to produce hypertrophy of the gingivae. Substitute drugs cannot always be used in the place of dilantin.

Abnormal muscular tensions deform the dental arches and cause malocclusion. Malocclusion may also be the result of heredity, or the physical ineptness of the individual. Looks, mastication, and speech suffer. The treatment of a malocclusion of this type is often extremely difficult. Falling occurs more frequently in the handicapped than in normal children and may cause fractures or other trauma to the anterior teeth. Mouth breathing, common in these children, leads to gingival hypertrophy and inflammation.

The hospital administrator should be aware of the intricate and delicate psychological handling needed by both the handicapped child and his parents. As pediatrician and dentist know, success in the rehabilitation or maintenance of these patients is dependent upon infinite patience and willingness on the part of the professional personnel to work with the existing factors. Because handicapped children are over-protected by their parents, they are often hypersensitive. Even though they are anxious to cooperate, they have difficulty in adjusting to new situations and react with apprehension to the dentist and his equipment. The mentally retarded child tends to be frightened because he can-

not understand what is being done for him. With skill, patience, and adequate preparation of the parent or guardian, the dentist can often win his patient's trust and thus avoid psychological trauma to the patient, and minimize future difficulties. To achieve optimal results, the dentist should explain the situation to the parents; know the child's medical and dental history, his home environment and character. The child with institutional training responds better than does the home-trained child.

Once the dentist gains the patient's confidence, he still must cope with the involuntary movements of the patient. Dentists skilled in the care of the handicapped child have worked out means of avoiding restraint and coercion. This may consist of having the child sit on the lap of the parent or an attendant while in the operating chair. An *auxiliary head rest*[1] may be attached to the arm of the chair. If the child sits alone, the chair may be tilted back to prevent his slipping out, while a broad canvas band is passed around his chest and abdomen, to be buckled behind the backrest of the chair. Another band, with a small sandbag at each end, is laid over the thighs.

If the child is too frightened by these measures, or if the spasticity is too great, a muscle relaxant is given. The mouth may have to be opened with a wedge prior to the insertion of various mouth props.[2] Finger guards may also be used as desired. A sedative or relaxant may be required even for a preliminary examination or dental x-ray.

When the child's handicap is severe, his resistance is greater and a general anesthetic is indicated. It must be administered by an anesthetist, and where a general anesthetic is inadequate, the outpatient dental office becomes impractical. The risk of an anesthetic fatality in the dental chair is high. Although our dental group has full access to the operating room of Kaiser Foundation Hospital, we rarely use these facilities because in our opinion most abnormal children can be treated under an office routine. For the treatment of many handicapped children, the hospital operating room offers the best solution. In the hospital, the child's ability to undergo anesthesia should be gauged on the basis of the medical examination, which includes possible chest and skull x-rays, blood chemistry tests, and urinalysis.[4] The patient with hemophilia requires hospitalization for the simplest dental procedure.[3] This insures complete control over the safety of the child. It may be necessary to administer transfusions of whole blood or plasma to control hemorrhage.

Dental procedures rarely impose a strain on the hospital's routine, since for the most part they are elective and can be set for a convenient time. The patient is admitted before noon or in the early morning, and is ready for discharge within four or five hours after the operation. The dentist is happy to cooperate with the hospital personnel, and will want to discuss the case with the staff physician in charge, the anesthetist, the operating room nurse, and the head pediatric nurse. He will request previous hospital records and a complete case history, as well as to assist the parents in obtaining hospital and operating room reservations. The dentist should arrive at the hospital an hour before the operation to check on all arrangements, and will have with him the necessary dental equipment. This, of course, varies with each hospital set-up.

After the operation, the patient is kept under observation in the recovery room. Prior to discharge from the hospital, the

patient should be examined by the medical resident as well as a member of the anesthesia department.

The ideal arrangement for dental care of the handicapped child in the hospital is the fully equipped, permanent dental clinic. Such a department offers invaluable aid in diagnostic analysis, can cope with dental emergencies arising in hospitalized patients, give routine care to long term inpatients, and serve on an outpatient basis. (A clinic of this type is exemplified by Sinai Hospital in Detroit,[5] which provides services in all the specialties of restorative, periodontic, prosthodontic, orthodontic, endodontic, pedodontic, radiodontic, and oral surgical dentistry.) The Council on Hospital Dental Service of the American Dental Association has authorized specifications and rules for such a service, giving the dental department equality with the other hospital departments.[6]

Many hospitals do not have elaborate dental facilities. Hospital administrators usually think in terms of minimum practical arrangements. How much space is absolutely essential? Some handicapped children enter the outpatient office in a wheelchair, accompanied by an attendant. In order to accommodate them, a room at least 9 by 12 feet is necessary—larger than the minimum size dental office.

What equipment must be purchased? Existing equipment in the out-patient otolaryngology department can be used with some improvisation. The Ritter ENT unit, for example, is provided with air, water, and light, and will serve adequately for many purposes. The costlier dental chair is preferable because all its parts are adjustable and in addition the arm rest drops to permit greater accessibility.[7]

A portable dental engine is necessary. It can be used in the dental office, wheeled to the patient's room or to the operating room. It may also be used by the otolaryngologist to perform a fenestration as well as by the orthopedist for pin and wire operations.

A bar suspended over the dental chair enables many patients to lift themselves from the wheel chair into the dental chair, saving heavy labor on the part of the assistant and helping to raise the patient's independency.

A surgical type of aspirator is a must, since these patients may have difficulty in swallowing.

A broad canvas band with quick-acting buckles can be used to hold the spastic child in the dental chair. A plywood operating table[8] laid over the dental chair may permit treatment with the patient in the supine position. An auxiliary headrest[1] fastened to the arm of the dental chair when the patient is held on the parent's or an assistant's lap, tends to give the head greater support. A shoulder and leg harness may control the patient and control involuntary movements. An adjustable plywood table and plywood seat to fit onto the dental chair can be made in the hospital's carpenter shop.

Finger protectors may be made from flexible metal, rubber garden hose, or a metal sewing thimble covered with a rubber finger cot. Wooden wedges may be made in the shop, for opening the mouths of spastic patients;[2] mouth props of several types are available; metal mouth mirrors (to prevent possible breakage)[9] are used.

The dentist will be able to ascertain the necessary auxiliary dental equipment needed for the treatment of the handicapped patient. Where a department of dentistry is planned, the administrator should confer with the dentist

concerning the proposed department.

Close cooperation among the various professions involved in the overall care of the handicapped patient as well as good thorough parent education will approach the ideal maximum dental treatment for these unfortunate individuals.

3451 Piedmont Avenue
Oakland, California

REFERENCES

1. BRAMER, MAX L., A portable auxiliary headrest in dentistry for children. J. Am. Dent. Assn. 51:718, 1955.
2. MOSS, AARON A., Dental treatment of the cerebral palsied child. Dental Digest, December, 1951.
3. LINDSAY, W. R., et al., Management of a true hemophiliac requiring the extraction of a primary tooth. Oral Surgery, Oral Medicine, and Oral Pathology 6:274, 1953.
4. ALBUM, M. M., Operative dentistry under general anesthesia for difficult patients. J. Dentistry for Children 20:157, 1953.
5. STULBERG, SAMUEL., 17316 Livernois Ave., Detroit, Mich. Paper read before the Academy for Oral Rehabilitation of Handicapped Persons, meeting in Chicago, Illinois, February 5, 1956.
6. "Package Library" of reprints from the Library of the American Dental Association, 222 East Superior Street, Chicago 11, Illinois.
7. Dental Treatment Planning for the Handicapped. Brochure prepared by the Academy of Dentistry for the Handicapped.
8. ALBUM, M. M., Cohen's The Handicapped Child. *Pediatric Dentistry*. St. Louis, C. V. Mosby Co., 1957, p. 305 ff.
9. EISENFELD, IRWIN and FRIEDMAN, E. U., Observations on the dental treatment of cerebral palsied children, J. Am. Dental Assn. 47:538, 1953.

Pulp-Curettage; A Review*

MAURY MASSLER, D.D.S., M.S.

THE basic questions put to this committee of one were what is meant by pulp-curettage and how effective is this type of treatment when compared to other methods of pulpal therapy? It is obvious that a clear definition of the term and the procedures associated must be made before any attempt can be made to evaluate its effectiveness. The term "pulp-curettage" was (so far as can be determined) proposed by Chatterton in 1950 in a short paper published in the *Journal of the Southern California Dental Association* in September 1950. Another paper was printed in the *Journal of the American Dental Association* in October 1952. Little evidence or data were presented in these papers to support its effectiveness. Histologic sections from a single tooth were shown by the investigator before this Academy in 1956. This section showed some bridging over a small pulp-amputation in a primary tooth.

Webster's New Collegiate Dictionary and Dorland's Medical Dictionary both agree that curettage refers to a procedure using a scoop or spoon or scraper to remove foreign bodies, growths, or other matter from the walls of a cavity. In this sense, the term curettage is a descriptive one.

It is interesting to note, as has been pointed out by Easlick, that the usual pronunciation of the word curettage may be incorrect. The term is derived from the French curer, to cleanse. The common pronunciation also is the French pronunciation, curet-tage′. Unhappily, the dictionaries have Anglicized the pronunciation, as cu-ret′-tage. Which is correct? In the reading of this paper, the French, curett-age′ will be used which is also Chatterton's pronunciation.

Chatterton defines pulp-curettage as (a) the treatment of vital pulps with small exposed areas by (b) removal of the carious dentin and a small portion of pulp at the point of exposure followed by (c) the application of a medicament which in his treatment was a tetracycline antibiotic, Aureomycin.

In 1952, Chatterton stated: "1. Pulp curettage is a term applied to the removal of a portion of the pulp at the point of exposure. 2. This method of treatment is similar to the vital pulpotomy technic. 3. A total of 377 posterior teeth have been treated by the pulp-curettage technic. 4. A preliminary report of 71 cases, which have been under observation for one or more years, indicates a potential of 72 per cent of success with this method of treatment."

If this investigator's procedure is compared with other methods or procedures used in the therapy for vital pulps, it becomes clear that pulp-curettage is actually very similar to direct pulp-capping or a very small pulp-amputation used for years by many other practitioners and schools.

Perhaps a review of the various terms used in the therapy for vital pulp may clarify the situation further.

* Presented at the Annual Meeting of the American Academy of Pedodontics, St. Louis, Oct. 26-29, 1958.

Definition of Terms in the Therapy for Vital Pulps

1. Indirect Pulpal Therapy.

Application of a drug which affects the pulpal cells over a thick layer of sound or carious dentin, as in a moderately deep preparation for a restoration. The drug acts directly on the cut ends of the odontoblastic processes to affect these cells directly or diffuses through the tubules or softened dentinal matrix to affect pulpal cells and structures deeper within the pulpal tissue.

2. Indirect Pulpal Capping.

Application of a drug over a very thin layer of sound or carious dentin. There is no exposure of the pulp visible clinically or histologically. The drug diffuses readily through the thin layer of dentin and acts upon the pulpal structures and cells.

3. Direct Pulpal Capping.

Application of a drug over an actual (usually small) exposure of the pulp so that there is direct contact between drug and pulpal tissue. The exposure may be accidental (as in a fractured tooth or during the preparation of a cavity) or deliberate (following the removal of carious dentin).

4. Pulpal Amputation.

Surgical removal (planned, not accidental) of a portion of the pulp. The portion removed is presumed to be so injured or infected as to preclude healing.

A. Very small amputations confined to exposures—pin-point or pin-head in size.

B. Pulpotomy—A term used to indicate surgical amputations confined to the pulpal chamber.

1. Partial pulpotomy—surgical removal of only a part of the tissue in the pulpal chamber.

2. Total or complete pulpotomy—surgical removal of the entire contents of the pulpal chamber to the entrance of the root canal (s).

C. Pulpectomy—Surgical removal of the pulp from the root-canals.

1. Partial pulpectomy—surgical removal of only a part of the contents of the canal (s);

2. Complete pulpectomy—surgical removal of the pulp to the dentino-cemental junction at the apex of the root.

Figure 1 attempts to diagram the meaning of the various terms in histological symbols.

From the definition of terms and procedures outlined, it seems clear that pulp-curettage is actually another term for direct pulpal capping or a very small pulp-amputation. If this conclusion is correct, then the evaluation of the effectiveness of this procedure may be determined by a review of the data presented in the literature.

Effectiveness of Direct Pulpal Capping. A number of investigators have presented evidence and even statistical treatment of data based on histological as well as clinical criteria to show that indirect pulpal capping clinically is successful more often than the direct application of a drug to a small exposed area. The same investigators also present data to show that surgical amputations (pulpotomy) also more often are successful than the application of drugs to a pinpoint exposure.

Kraus (1934) and Bonsack (1952) presented many clinical experiences to show that indirect pulpal therapy is less irritating to the pulp and results in a better reaction of the tissue and superior healing than does the direct application of a drug or antiseptic to a pulp which has

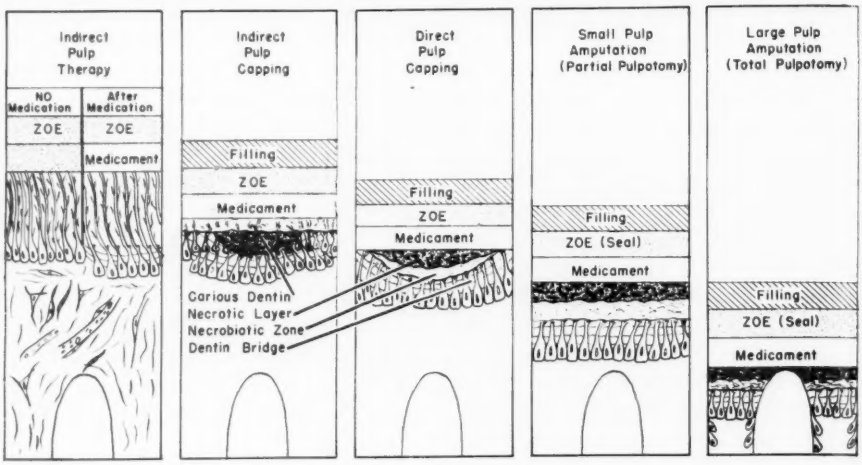

FIGURE 1. Pulp therapy—types and reactions.

been severely injured by the instrumentation incident to removal of the overlying carious dentin.

Castagnola (1956), cited by Berman (1958), presented clinical data to compare the results of indirect pulpal capping and small surgical amputations and partial pulpotomies. He concluded that indirect pulpal capping more often was successful than pulpotomy.

It is interesting to note that Chatterton emphasized the use of Aureomycin as the material for pulpal capping in 1950 but changed to calcium hydroxide in 1952. Castagnola (1956) and more recently James, Englander and Massler (1958) showed that the tetracycline drugs were superior to penicillin in this respect, but both were definitely inferior to calcium hydroxide as a material for pulpal capping or surgical dressing—especially if the calcium hydroxide were buffered with methyl cellulose (as in *Pulpdent*) or with other salts or serum (as in *Calxyl* or *Sero-calcium*).

SUMMARY

Pulp-curettage designates the removal of all or almost all of the carious material over a small exposure of the pulp plus a small portion of the underlying pulpal tissue to a level presumed to be too severely injured for recovery; attendant with or without minor bleeding; followed by the application of a medicament. Since this procedure is in effect a direct application of a drug to injured and possibly infected, but still vital pulpal tissue, it is similar (if not identical) to the common procedure of direct pulpal capping as employed by many others.

Direct pulpal capping designates the removal of all carious material to the point of a small exposure of pulpal tissue and then the direct application of a drug to the exposed pulpal tissue. Indirect pulpal capping designates the nonremoval of a thin layer of carious dentin (to avoid surgical trauma to the preparative cells of the pulp) and the application of antiseptic agent to sterilize the dentin. These procedures are in contrast

to surgical amputations (pulpotomies and pulpectomies) which remove the carious material and a goodly portion of the underlying pulp on the premise that this portion is injured and infected and unable to undergo repair. Pulpal capping (both direct and indirect) is based on the premise that, under a small exposed area, the injured portion of the pulp is still vital and able to recover and bridge the exposed area.

It is suggested that pulp-curettage is another technic to select in an array of procedures for direct pulpal capping. It is not basically different from the procedures reported by Hess, Castagnola, Müller, and many others.

A review of the literature indicates that direct pulpal capping is less often successful than indirect pulpal capping or pulpal amputations. Some investigators suggest that it be abandoned in favor of the other two methods of therapy for vital pulps.

Conclusions

Pulp-curettage is a term used by Chatterton (1950, 1952) to describe a procedure which differs from other direct pulpal procedures for capping (or small pulpal amputations) only in that the medicament used was Aureomycin (in 1950) or calcium hydroxide (in 1952). Since it has been demonstrated that the use of a buffered calcium hydroxide is superior to any antibiotic as a material for pulpal capping (used either directly or indirectly) and since it is established that both indirect pulpal capping and pulpal amputation more often are successful than direct pulpal capping, there appears to be no justification for the continued use of the term pulp-curettage.

University of Illinois
College of Dentistry
808 S. Wood St.
Chicago 12, Illinois

BIBLIOGRAPHY

1. Berman, D. S., Pulp amputation and healing. J. Dent. Child., 25:84-104, 2nd Quar. 1958.
2. Bonsak, C., Le coiffage natural ou indirect. Schwerz. Monatsschr. Zahnheilk, 62:219-42, Marz 1952.
3. Castagnola, Luigi, Die lebenderhaltung der pulpa in der konservierenden zahnheilkunde. Munchen, Carl Hansen, 1953. VIII + 127 p.
4. Castagnola, Luigi, and Orlay, H. G., Direct capping of the pulp and vital amputation. Brit. Dent. J., 88:324-30, June 16, 1950.
5. Chatterton, D. B., Pulp curettage. South. Cal. S. Dent. A. J., 17:30-3, Sept. 1950.
6. ————, Pulp curettage. Am. Dent. A. J., 45:462-5, Oct. 1952.
7. James, Verna E., Englander, H. R., and Massler, Maury, Histologic response of amputated pulps to calcium compounds and antibiotics. Oral Surg., Oral Med. and Oral Path., 10:975-86, Sept. 1957.
8. Kraus, A., Ist exkavieren bis ins gesunde dentin notwendig? Zeitschr. f. Stomotal., 32:1459, 1934.

Abstracts

EDITOR'S NOTE:

Of extreme interest to our readers should be the two abstracts presented herewith, having to do with hospital procedures. The problem discussed is of deep concern to patients, personnel and operating staffs of hospitals.

A.E.S.

CONTROL OF INFECTION WITH HOSPITALS—SPECIAL REFERENCE TO PREVENTION WITHIN OPERATING ROOMS—R. Adams, M.D.; B. Fahlman, M.S.; E. W. Dube, R.N.; F. J. C. Dube, M.D.; S. Read, M.S., Jr. of A.M.A., Vol. 169, No. 14, p. 1557-67, April 4, 1959.

This study was initiated at Huggins Hospital of Boston University School of Medicine to determine the causes for infections which occurred as well as to determine methods for prevention. It was realized that nearly any patient who entered the hospital clean during the preceding year and who had contracted an infection while there, was the victim of an error in technique. These errors the authors relate include prophylactic use of antibiotics and steroid hormones used nonspecifically but infection incidence was influenced by these two factors only as they may have been induced by self, druggist or practitioner administration to patients before they were hospitalized.

The knowledge that clean or healthy tissues become infected because they are exposed to infectious agents at a level of virulence, concentration or frequency of exposure beyond their resistive powers. The article goes on to remind us that where there is no contamination of healthy tissues, there is no infection. Therefore when necessary standards of sanitation and care are practiced in the protection of tissues from contact with infectious organisms, almost no infection will occur. The problem is one of cleanliness—how to attain it, and how to maintain it.

The authors report on the causes of infections in the hospital and the control program instituted. Infection they relate was carried by blankets, shoes, the bottoms of trousers, vacuum cleaners, and dry mops.

An interchange zone was developed to separate the surgical area from uncontrolled areas and a sexless, sizeless, reversible gown, and improved footwear were adopted to facilitate changing when personnel are obliged to pass from one area to another. A fitted filter autoclavable mask was devised to prevent contamination of clean room air by respiratory exhalation of patients or personnel. This filtered type of mask has proved successful in controlling at least 98 per cent air contamination of a room by human exhalation.

Nine-tenths of the causes of wound infections are believed to arise in the operating pavilion area from entry into the wound of germs from the air or from famites about the personnel and patient, including those of the patient's skin. To achieve the ultimate in asepsis in the hospital area, no appeal for leniency is tolerable.

MANUEL M. ALBUM

EFFECTIVE SYSTEM OF BACTERICIDAL CONDITIONING FOR HOSPITALS—P. B. Hudson, M.D.; G. Sanger, M.D.; E. E. Sproul, Jr. of A.M.A., Vol. 169, No. 14, p. 1549-56, April 4, 1959.

The authors make note that an increase in mortality and morbidity from infections in hospitals is attributed to dissemination of bacteria which are resistant to antibiotic drugs. The coagulase-positive Staphylococcus aureus (80/81 strain) being the most prominent. The problem is of such magnitude that it is now becoming necessary to set up infection committees in all institutions where sick people are housed.

The prime step is to control the hospital environment which in turn will control hospital infections. This of course is indirectly related to the patient's own personal environment which is centered around the air in which the patient moves and which he breathes as well as what he touches.

The relative importance of any portion of the environment the article points out depends on the intimacy, frequency, and duration of contract which the patient may have with that particular unit. The bacterial population in the respiratory system and on the skin of patients, hospital staff, and visitors are considered to be an uncontrollable portion of any patient's environment. The removal of bacterial contamination and simple detection is one of the prime objectives in the design of an environmental control system. The hospital as the article relates, has changed from a respository for germs into a self-decontaminating area.

Since daily treatment of the patients' entire environment with chemicals is not feasible, the bactericidal treatment of air can and must be continuous. Bactericidal agents were used for all hospital laundry, ceilings, walls, floors. mattresses, furniture; all received added bactericides. Every article within patient contact was either washed or sprayed with a bactericide. Exhaust fans and fresh air intake window fans were utilized.

The effectiveness of this experiment at the Columbia-Presbyterian Medical Center showed that it was possible to bring about a steady reduction of bacteria in the air without depending on a central air conditioning system. But bactericidal filtration of air without inclusion of bactericidal measures of all aspects of hospital housekeeping is not sufficient for optimal results. The two must be used together.

MANUEL M. ALBUM

ARCH LENGTH DEFICIENCY IN THE MIXED DENTITION—Foster, H. R. and Wylie, W. L., Am. J. Orthodont., 44:464, June 1958.

The authors completed a study of 34 children in the transitional dentition period. They utilized headfilms, plaster models and intra oral films taken at intervals of 18 months. Mandibular canines were removed in 23 cases because of crowding in the anterior segment and the extractions were intended to alleviate it, or were recommended because one primary canine had been lost and they sought to restore symmetry (6 cases). In 4 other cases, both

canines were lost prematurely due to caries or ectopic eruption in that segment. The average age at which the primary canines were removed was 8 years 2 months, and the average age at the time of terminal models was 12 years 8 months. Eleven of the 34 had no appliance placed during the entire suture period of observation while 23 wore the preventive lingual arch as described by Nance.

It was concluded from the results of this study that the removal of primary canines has no adverse effect upon ultimate intercanine width. When premature removal of primary canines was indicated, placing a lingual arch had dubious value in this series of patients, whether it was intended to prevent lingual positioning of incisors or to prevent forward positioning of molars. It was found that arch length shortens in the transition from the mixed to the permanent dentition. In most instances, it was attributed more to a lingual shifting of incisors rather than to a forward shift of molars. It was apparent that the prediction of arch length deficiency in the permanent dentition based upon measurements made during the mixed dentition was sufficiently inaccurate that caution should be exercised in applying such predictions clinically.

RALPH E. MCDONALD

HUMAN TOOTH FORM AND ARRANGEMENT FROM THE ANTHROPOLOGIC APPROACH —C. H. Moses, D.D.S., Jr. of Prosth. Dent., Vol. 9, No. 2, p. 197-212, Mar.-Apr. 1959.

Dr. Moses relates that in the past, teeth which were worn, with partial or complete obliteration of the cusps, were considered to be pathologic; and measures advocated to restore them to their unworn form.

Actually all living organisms thrive in the environment to which they are adapted. An environment is rarely, if ever, constant. Mechanisms which possibly took millions of years to develop were devised to meet immediate changes in environment. Skeletal bones, nervous and vascular systems, organs, and muscles are not only created for, but to comply with the needs of the total organism to meet an environment. The structures of the masticatory apparatus were thus evolved. The form and location of each tooth and the angulation of position were evolved because of need for that form. This is not predetermination but adaptation. This is in keeping with anthropologic studies.

Nearly all teeth from prehistoric and primitive peoples manifest wear. During the existence of man, mechanisms were developed to compensate for and to take advantage of wear. In man the erupting mechanism need not be as rapid and as vigorous since his life span until recent years was relatively short. With human teeth there is no repair of worn-out tissues. Wear on human teeth may progress as far as the pulp chamber. Nature then sets up an internal defense against wear by laying down calcific deposits and causing a recession of the pulp as wear progresses.

Well defined cusps produce a very efficient shearing mechanism. The reason for wear taking place on the lower buccal cusps and the upper lingual cusps is because these are the common contacting surfaces with their opposing teeth.

The author stressed the law that under normal conditions, a natural posterior tooth inclines in the direction of the ridge opposing it. In modern man, the mandible is usually wider than the maxilla. This accounts for the mandibular bicuspids and the first two molars to incline lingually while the opposing maxillary teeth incline buccally. The inclination of the posterior natural teeth will vary with the architecture of the bone and therefore with the position of the opposing teeth.

The article is worth-while reading in its entirety.

MANUEL M. ALBUM

American Society of Dentistry for Children

OFFICERS—1958-59

HAROLD K. ADDELSTON ..... *President*
WILLIAM E. BROWN ..... *President-Elect*
JAMES H. SIMMONS ..... *Vice-President*
RALPH E. MCDONALD ..... *Secretary-Treasurer*
ALFRED E. SEYLER ..... *Editor*

EXECUTIVE COUNCIL

HAROLD K. ADDELSTON
WILLIAM E. BROWN
JAMES H. SIMMONS
RALPH E. MCDONALD
ALFRED E. SEYLER
ALBERT L. ANDERSON
LAWRENCE R. BURDGE '59
VICTOR J. LENCHNER '59
DAVID B. LAW '59
MANUEL M. ALBUM '60
PAUL M. WEBER '60

Executive Secretary—C. F. TUMA, 13201 Miles Ave., Cleveland 5, Ohio

STANDING COMMITTEES

Budget

ALBERT L. ANDERSON, *Chairman* '60
3355 Fourth Avenue, San Diego 3, Calif.
WILLIAM E. BROWN '59
705 N. University Avenue, Ann Arbor, Mich.
LAWRENCE R. BURDGE '62
63 East Front Street, Red Bank, N. J.
GEORGE HIGUE '61
4327 East Gage Avenue, Bell, Calif.
RALPH E. MCDONALD '63
1121 W. Michigan Street, Indianapolis 2, Ind.

Constitution and By-Laws

LAWRENCE R. BURDGE, *Chairman*
63 East Front Street, Red Bank, N. J.
ALFRED E. SEYLER
18557 E. Warren Ave., Detroit 36, Mich.
ALBERT L. ANDERSON
3355 Fourth Avenue, San Diego 3, Calif.

Community Dental Programs

WESLEY O. YOUNG, *Chairman* '61
723 Village Lane, Boise, Idaho
WENDELL WHETSTONE '59
2344 Biscayne Boulevard, Miami, Fla.
RICHARD D. KORNS '60
518 Frisco Building, Joplin, Mo.
ROBERT C. READ '62
2719 W. Santa Barbara, Los Angeles, Calif.
DAVID STRIFFLER '63
State Health Department, P. O. Box 711, Santa Fe, N. M.

Membership

JAMES SIMMONS, *Chairman*
5225 W. Freeway, Fort Worth 7, Texas
NORMAN OLSEN '63
The Dental School, Northwestern University, 311 E. Chicago Avenue, Chicago, Ill.
DAVID L. WEBBER '59
1618 Main Street, Springfield, Mass.
CHARLES SWEET, JR. '60
2940 Summit Street, Oakland 9, Calif.
IRVING W. EICHENBAUM '61
24 Washington Street, New Britain, Conn.
JOHN SHARPLEY '62
4116 Northern Parkway, Baltimore 6, Md.

Professional Relations

H. CURTIS HESTER, *Chairman* '61
855 Bloomfield Avenue, Glen Ridge, N. J.
MYERS THORNTON '63
2921 Fairmount, Dallas, Texas
PAT H. LYDDAN '60
302 Francis Building, Louisville 2, Ky.
ROBERT W. BURCHESKY '59
135 Westminster Place, Utica, N. Y.
B. Z. RABINOWITCH '59
5720 Wilshire Blvd., Los Angeles 36, Calif.

Public Relations and Publicity

MODE R. PERRY, *Chairman* '62
4595 College, San Diego, Calif.
CHARLES E. OXAR '59
7625 N. E. 2nd Avenue, Miami 38, Fla.
WILLIAM E. CODY '60
1325 East 16th Avenue, Denver, Colo.
DEAN HUCHEL '61
10742 Riverside Inn, North Hollywood, Calif.

State Units

WILLIAM E. BROWN, *Chairman*
705 N. University Avenue, Ann Arbor, Mich.
PAUL SYDOW '62
29 Lincoln Street, Framingham, Mass.
RICHARD E. JENNINGS '59
1614 N. Lyndhurst Drive, Speedway, Ind.
JAMES CONDON '63
731 West Indiana, Spokane, Wash.
MELVIN A. NOONAN '61
630 N. Woodward, Birmingham, Mich.
IRWIN I. BEECHEN '60
2929 Summit Street, Oakland, Calif.

Schools and Dental Boards

DOUGLAS J. SANDERS, *Chairman* '61
Baltimore College of Dentistry, University of Maryland, Lombard and Green Streets, Baltimore 1, Md.
DAVID B. LAW '62
812 General Insurance Bldg., Seattle 5, Wash.
WILLIAM S. KRAMER '63
University of Nebraska School of Dentistry, Lincoln 8, Nebr.
ARTHUR M. MICKLER '59
1974-A Douglas Boulevard, Louisville, Ky.
FRANCIS I. FLEEGE
Marquette University Dental School, Milwaukee, Wis.

Editorial and Publications

MANUEL M. ALBUM, *Chairman* '59
Medical Arts Building, Hillside Avenue and New York Road, Jenkintown, Pa.
GORDON H. ROVELSTAD '60
3244 Harrison Street, Evanston, Ill.
BASIL BIBBY '61
Eastman Dental Dispensary, 800 Main Street, Rochester, N. Y.